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The hours and the cost of
labour in the cotton...

London

[1894]

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Manchester Statistical Society.

THE HOURS AND THE COST OF LABOUR IN
THE COTTON INDUSTRY AT HOME
AND ABROAD.

BY F. MERTTENS.

READ APRIL 18TH, 1894.



JOHN HEYWOOD,
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THESE words were written in 1823 by Robert Owen, one of the pioneers of our factory legislation.

He not only advocated a more humane treatment of the operatives, shorter hours of employment, the prohibition of the employment of children under ten years of age, and universal compulsory education, but had the courage to put his principles to the practical test.

Sir Robert Peel, Oastler, Sadler, Lord Ashley and others supported him and took up the cause of the poor factory workers : but the political economists and the majority of the employers of that day replied to their proposals, that "a reduction in the working hours would cause a proportionate reduction in wages, thus raising the cost of production, and therefore the price of commodities, which would injure the working classes themselves and strengthen foreign competition. The effects of legislative enactments would be totally unwarrantable on the grounds of humanity and kindness to the labouring classes."

"Lord Brougham, chief of the scientific statesmen of the period, headed the opposition to factory legislation. According to him, the protection of property 'was the sole function of an enlightened Government.' The protection of the workers he considered to be an unwarrantable interference with the laws of supply and demand, and the limitation of child labour an infringement of the rights of parents."*

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The horrors and cruelties of our factory system in the early part of the century seem scarcely conceivable to the present generation. Children of tender years, some not more than five years old, were sold to factory owners by churchwardens and overseers of the poor, under the "apprentice" system, and treated by them as so much live stock or assets in the valuation of their concerns. Under kicks and blows, sick with aching backs, bleeding fingers, and inflamed ankles, the poor little slaves toiled from early morning till late at night.*

Sir Robert Peel, himself a large factory owner, employing about 1,000 children, had come to the relief of the oppressed little ones. In 1819, an Act was passed by which no child under nine years of age should be employed in a cotton factory, and no young person under sixteen be allowed to work more than twelve hours a day, exclusive of meals.

In 1825, Sir John Hobhouse passed a Bill by which it became unlawful to employ any child or young person under eighteen years of age in a cotton factory for more than 69 hours a week; and in 1833 a further enactment forbidding night work for persons under eighteen years of age, and stipulating a maximum employment of 48 hours per week for children from nine to thirteen years of age became law.

The majority of employers still resisted all factory legislation, and the above laws were frequently infringed and contravened owing often to the isolated situations of the mills and the absence of proper factory inspection.

In 1847 the Ten Hours' Bill was introduced by John Fielden and carried, although opposed by political economists and statesmen, such as Cobden and Bright, whose interest in the welfare of the people was beyond suspicion.

Bright told the House of Commons "that the proposition was most injurious and destructive to the best interests of the country; believing that it was contrary to all principles of sound legislation, that it was a delusion practised upon the working classes, that it

* Ed. Hodder, "Life and Work of the Earl of Shaftesbury."

was advocated by those who had no knowledge of the economy of manufacture, believing that it was one of the worst measures ever passed in the shape of an Act of the Legislature, and that, if it were now made law, the necessities of trade and the demands alike of the workmen and the masters would compel them to retrace the steps they had taken—believing this, he felt compelled to give the motion for the second reading his most strenuous opposition."*

This Act which fixed the working day for young persons and women from 6 a.m. to 6 p.m., with intervals of one and a half hours for meals, was not strictly carried out till after 1850. Then these hours became the recognised working day for all factory operatives, as indeed was expected would be the case by the more enlightened advocates of the measure. In 1876 the hours were further reduced to 56½ without any opposition on the part of employers.

DEVELOPMENT OF THE COTTON INDUSTRY AND CHEAPENING OF PRODUCTION.

The development of the cotton industry in Great Britain, and the cheapening of production, notwithstanding these reductions of working hours, may be seen from the following figures taken from Mr. Thos. Ellison's "Cotton Trade of Great Britain," as far as the years 1880-82.

I have brought the tables up to date, based on Mr. Ellison's latest figures and added the production per hour. The figures for 1891-93 would show a still more favourable progress if the Oldham lock-out had not curtailed the consumption of cotton by 240,000,000 lbs.

The increased production per operative and per spindle, is all the more remarkable because the spinning of finer counts is increasing, and that of lower counts decreasing, year by year, thus steadily reducing the output in weight.

The table referring to the weaving of cotton goods shows an equally interesting development. It will be noticed that the wages cost of weaving per lb. since 1880-82 shows a slight increase, but this must be attributed to the increasing production of finer, lighter, and higher class cotton textures. The production of heavy cotton goods, such as domestics and drills, has considerably decreased in the last ten years.

* Hansard.

YARNS.

Year.	Spindles.	Operatives in Spinning.	Operatives per 1000 Spindles.	Hours per 1000 Spindles.	Average Wages per Week.	PRODUCTION.			Yarn Spun.	Labour Cost per Pound.	Yarn Exported.
						Per Spindle per Year.	Per Operative.	Per Hour.			
					s. d.	Lbs.	Lbs.	Lbs.	Lbs.	d.	Lbs.
1829-31	10,000,000	140,000	140	69	10 6	216	1546	431	216,300,000	4 2	63,300,000
1844-46	19,500,000	190,000	974	60	11 0	268	2754	883	523,300,000	2 3	145,100,000
1859-61	30,400,000	248,000	816	60	12 6	300	3671	1176	910,000,000	2 1	189,130,000
1880-82	42,000,000	240,000	571	56½	17 0	315	5520	1879	1,324,900,000	1 9	236,360,000
1891-93	45,270,000	220,000	486	56½	19 0	324	6602	2267	1,465,600,000	1 6	228,362,000

GOODS.

Year.	Looms.	Operatives in Weaving.	Hours per Week.	Average Wages per Week.	PRODUCTION.			Goods Produced.	Labour Cost per Pound.	Goods Exported.
					Per Loom per Year.	Per Operative.	Per Hour.			
				s. d.	Lbs.	Lbs.	Lbs.	Lbs.	d.	Lbs.
1829-31	Power 80,000 Hand 225,000	50,000 225,000	69	9 6	470	521	145	143,200,000	9 00	82,600,000
1844-46	Power 225,000 Hand 60,000	150,000 60,000	60	10 0	1234	1681	539	348,110,000	3 50	228,500,000
1859-61	400,000	203,000	60	11 10	1627	3206	1707	650,870,000	2 90	536,000,000
1880-82	550,000	216,000	56½	15 0	1866	4039	1374	993,540,000	2 30	888,000,000
1891-93	660,000	310,000	56½	16 6	1866	3972	1352	1,231,300,000	2 59	993,640,000

The above tables show the number of operatives in spinning mills to have been 4·86 per 1,000 spindles in 1891-93 against 14·0 in 1829-31. It will be understood that statistics of particular mills, given in this paper, vary considerably from the general average.

The cheapening of our productions is further graphically illustrated by Mr. Thomas Ellison's "Cotton Trade of Great Britain."

	1830.	1860.	1882.	1894.
1lb. of 40's twist	1s. 2½d.	11½d.	10½d.	7½d.
Cotton, 18oz. ...	7½d.	6½d.	7½d.	4½d.
Leaving for cost of production, profit, &c.	6½d.	4½d.	3½d.	2½d.

In finer numbers this is equally marked :

	1830.	1860.	1882.	1894.
1lb. of 100's Weft	3s. 4½d.	2s. 4d.	1s. 10d.	1¼
Cotton, 18oz. ...	1s. 1½d.	11d.	9½d.	7d.
Leaving for cost of production profit, &c. ...	2s. 2½d.	1s. 5d.	1s. 0½d.	9d.

I find from the books of a well-known and old-established firm of spinners that the cost of wages for spinning 34's twist was -

	1830.	1856.	1862.	1893.
Per lb.	2½d. ...	0·95d. ...	0·63d. ...	0·45d.

The same books show the labour cost of preparing, carding, roving, &c., of this yarn, in 1874, to have been 0·62d. per lb. To-day the cost is not more than 0·38d. per lb., a saving in the labour cost of carding, &c., of ¼d. per lb. of yarn spun. Mr. Montgomery tells us that 4,500 throstle spindles, in 1836, produced 5,884lbs. of 17's twist at a labour cost of 1d. per lb. in a week of 68 hours. To-day 4,500 ring spindles would produce 15,000lbs. of the same count at a labour cost of 0·34d. per lb. in a week of 56½ hours.

The following shows the production of 32's twist per spindle :

1866, 22½ hanks, mule, in a week of 60 hours.	
1885, 28 " " "	56½ "
1893, 32 " " "	56½ "
1893, 44 " ring "	56½ "

Mr. Ellison gives the cost of labour for producing this number in 1882 as $\frac{1}{4}$ d. per lb. = 0.875d.

To-day the labour cost is 0.72d. for 32's mule, and 0.60d. for 32's ring twist.

Improvements in machinery and increased productivity of labour have brought about a reduction of piece wages in most departments of the cotton trade. Since 1877, for instance, the Oldham wage list, after allowing for advances, has undergone a reduction of about 8%, whilst to-day the weekly earnings of spinners average 2/6 to 3/- per week more than at that period.

It should be noted that in all labour costs of yarn mentioned in this paper, the wages of the operatives employed in preparing, carding, and spinning only, are taken into account, and do not include management, power or outside hands, unless specially stated.

REDUCTION IN THE NUMBER OF OPERATIVES.

The reduction in the number of operatives in relation to the machinery supervised by them is equally remarkable. In 1830 a mule contained 300 to 500 spindles, and necessitated one spinner and two or three piecers to work it. To-day the mules average fully 2,000 spindles per pair, and only one spinner and two piecers do the work.

A large concern, spinning fine counts only, employed—

1836	.....	10	Operatives per	1,000	spindles.
1850	.....	7.5	"	"	1,000 "
1865	.....	3.6	"	"	1,000 "
1893	.....	3	"	"	1,000 "

The following comparison by Professor von Schulze Gaevernitz, in the "Grossbetrieb," of two mills in England, each 70,000 spindles—one in 1830 and the other in 1892—is interesting:—

	1830. From Dr. Ure.			1892. Professor von Schulze Gaevernitz.			
	Men.	Women.	Children.	Men.	Women.	Young Persons or Children.	
Spinning Medium Counts.							
Preparing, &c.	26	—	27	13	2	—	
Carding, &c.	—	58	14	—	32	18	
Spinning, including Overlocker	105	—	403	32	—	65	
	131	58	444	45	34	83	
	633 operatives.			162 operatives.			
Per 1,000 spindles, 9'04	"			2'31			

Note the large reduction in the number of children employed.

The average number of spindles, looms, and operatives per mill in 1850 and 1890 are given as follows:

	Spinning Mills.		Weaving Mills.	
	1850.	1890.	1850.	1890.
Number of spindles per mill	11,885	33,601	—	—
" " looms	—	—	183	368
" " operatives	114	164	113	179
Mills combining spinning and weaving:				
	1850.		1890.	
	1850.	1890.	1850.	1890.
Number of spindles per mill	10,857	—	32,414	—
" " looms	—	128	—	431
" " operatives	171	—	—	438

Whilst an enormous increase in production at a steadily reduced wages cost has taken place in spinning, the weaving has made equal progress on the same lines.

A weaver worked in 1820	.....	0.90	looms.
" " 1850	.....	1—2	"
" " 1878	.....	2—3	"
" " 1885	.....	3—4	"
" " 1893	.....	4—6	"

There are fewer figures available to show the increase in the production and cheapening of labour of particular cloths at different periods, but Professor von Schulze Gaevernitz gives us the following, as taken from the books of a large concern at Hyde, for a $3\frac{1}{2}$ in. cloth of 72 reed, 20 picks, 26's twist, and 30's weft.

	Weekly Earning of Weaver.	Equiva- lent in Flour.	Per Operative.	Hours.	Cost of Labour. d.
1814.....	14s. od.	56lbs.	130.7yds.	80	1.3 per yd.
1832.....	12s. od.	65lbs.	221.2yds.	72	0.60 "
1890 { 3 looms	17s. 2d.	151½lbs.	540yds.	56½	0.38* "
1890 { 4 " 22s. 5d.	208lbs.				

This compares with—

1893...6 looms	28s. od.	320lbs.	1200yds.	56½	0.33 "
learner 5s.					

TECHNICAL PROGRESS.

Prof. von Schulze Gaevernitz says of this development of our industrial system, that "technical progress, conjointly with the

* Professor von Schulze Gaevernitz. "Grossbetrieb."

† Burnley production. A 4-loom weaver at Hyde would produce about 800yds.

increase in the productivity of labour, results in a reduction of piece wages, but an increase in the weekly earnings of workers, and a gradual reduction of the hours of employment."

The enormous increase in our producing power is largely owing to the improvements in mechanical appliances, and these are due to the stimulating effects of—

- (1) Pressure of competition.
- (2) Advancing wages.
- (3) Shortening of the hours.

As wages advance, and hours are shortened, employers endeavour to replace labour by capital, viz, machinery; and anyone examining the complicated and delicate mechanism at work in our cotton mills to-day, must marvel at the ingenuity and patience of the many minds which have gradually evolved these labour-saving appliances; and these inventors, whilst wishing to economise the cost of labour, have become the benefactors of our working classes.

This complicated and delicate machinery can only be brought to the height of its productive capacity by a skill and intelligence of the operatives not possessed by their forefathers, and which we do not find amongst our Continental competitors. The physical exertion of our cotton operatives, no doubt, has been considerably diminished. To-day the spinner produces four times, the weaver eight times as much in $56\frac{1}{2}$ hours, as their grandfathers produced in 72 hours. In those days, no doubt, the man who worked the longest hours, and was the most industrious, obtained the largest product. To-day, however, the worker who has the least physical exertion to bring to bear on the mechanism he supervises, shows, through vigour, skill, and intelligence, the best result, although his hours are much shorter.

The style of work has changed completely; physical exertion is being largely replaced by mental application. The more complicated our machinery becomes, the greater must be the mental exertion and attention of the operatives; the more need, therefore, for high intelligence, vigour, and a feeling of responsi-

bility on their part; and these qualities cannot be expected or obtained from an underfed proletariat such as worked in our cotton mills sixty years ago, and such as we find to-day on the Continent of Europe.

IMPROVEMENT IN THE CONDITION OF THE WORKPEOPLE.

We have stated that the increased and cheapened production is partly due to the improvements in machinery, but it is equally owing to the improvement in the physical and mental condition of our workers; and this improvement has only become possible through

- (1) Increased earnings.
- (2) Reduction in price of commodities.
- (3) Shorter hours of work.

Mr. David Chadwick, a former president of the Statistical Society, in his paper on "Expenditure of Wages," has shown that the cost of the necessities of life to keep a workman, his wife and three children, aged two, five, and seven years was as follows:—

	1839.	1849.	1859.	1887.
Cost of living, per week	34/0½	30/11	30/0	28/5

Now compare with this the cotton operatives' income at the same periods:

Earnings of mule-spinner	20/0	22/0	26/0	28/0
„ throstle or ring „	7/0	7/6	9/0	12/0 - 14/0
„ weaver 3 looms ...	13/0	13/0	15/6	16/0 - 19/0
„ „ 4 „ ...	17/0	16/0	19/0	20/0 - 25/6
„ „ 6 „ ...	—	—	—	29/0 - 30/0
Hours worked.	69-72	60-64	60	56½

Here we have an illustration of the "starving wage" at the commencement of the industry, and the tendency towards a "living wage" of the present day cotton operative.

It is reasonable to suppose that the improvement in the material welfare of workers has made additional progress since 1887, through further shrinkage in the price of food and other necessities.

The Parliamentary Committee of 1834 says of the poor hand-loom weavers—and there were still 225,000 in existence in 1830,

many of whom were earning two to three shillings a week for 90 to 96 hours' work—that "they subsisted on the coarsest food, oatmeal, potatoes, weak tea, and dry bread, but even of this coarse food they had not sufficient." It mentions their slouching walk, hollow-cheeked appearance, and it is evident that such people could not be consumers of the product of their own industry.

How the consumption of cotton goods in Great Britain and Ireland has increased under advancing wages is shown by this table:—

In 1820.	35,620,000lbs.	=	15lb. per head.
In 1885.	201,800,000lbs.	=	53lbs. "
In 1893.	270,000,000lbs.	=	71lbs. "

But whilst the consumption of cotton goods and clothing increased in this extraordinary way, the high earnings produced even a more marvellous expenditure on articles of food and on the requirements of our modern civilisation. The day when increased wages and shorter hours meant merely more drink and debauchery has passed away with the development of our industry, and with the change that made the physically overworked, underfed, and despairing Chartist into a well-nourished, saving, and hopeful Trade Unionist.

The improvement in the material condition of the working classes has gone hand in hand with a decrease of the death-rate, the number of paupers, criminals and drunkards, and with a remarkable increase in savings banks deposits, and of small incomes—as evidenced by the Income Tax returns—and also of houses rented by the working classes.

Between 1875-1886 houses with rents from £10-15 increased 58%
 " " " £15-20 " 56%

Mr. Schoenhof puts it this way: "A high rate of wages expresses a high consuming power. A relatively high consuming power and a high standard of living are required to make the labourer efficient in body and mind."

PRESENT STATE OF TRADE.

After a period of rapid development engendered by prosperity at home, and inflation abroad, our cotton industry has suffered, like every other trade, under the general depression which has fallen on the commerce of the world, as the following trade returns show:

EXPORTS COTTON YARN.

1885-1887.	1888-1890.	1891-1893.
Total for 3 years 751,178,200lbs.	766,705,600lbs.	685,084,700lbs.

EXPORTS COTTON GOODS.

14,128,836,200yds.	15,163,817,900yds.	14,439,082,800yds.
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TOTAL VALUES OF IMPORTS AND EXPORTS.

1885-1887.	1888-1890.	1891-1893.
Imports... £1,085,150,406	£1,235,063,163	£1,264,651,147
Exports... 820,106,990	940,113,945	877,924,228

Whilst our exports of yarn in 1891-3 fell off 81,620,900lbs. = 10.6 per cent against the previous three years, our exports of cotton goods decreased 724,735,100yds, or 4.7 per cent, but still showed an increase of 310,346,200yds. over 1885-87, or 2.2 per cent. Our total imports in 1891-93 showed an increase of 2.4 per cent, and our total exports a decrease of 6.6 per cent on the previous three years.

The exports of yarn and goods together in 1891, however, amounted to £63,609,325

In 1893..... 56,354,230

Decrease £7,255,095

which decrease is fully accounted for by the Oldham lockout. The 15,000,000 spindles stopped for twenty weeks would have consumed 240,000,000lbs. of cotton, which in a manufactured state would fully represent the above decrease in our exports.

In looking back on the year 1893 we find that other countries fared worse than ourselves. The United States, ranking next to us in industrial development, had in 1893 51 per cent more failures than in 1892, with four times the amount of indebtedness,

excluding banks and similar institutions. Two millions industrial workers were out of work on the 31st December, 1893.* In August, 1893, 33 per cent of the cotton mills were stopped and 24 per cent of the total machinery idle at Fall River, and wages were reduced 8 to 10 per cent. Even now we read of fresh mills "shutting down," and of the trade preparing for a general lock-out.†

Meanwhile, the continuous depreciation of silver has further disorganised our great trade with the East, and countries nearer home in Europe have been brought face to face with bankruptcy or heavy deficits entailing fresh taxation, levied generally on the food and necessities of the people. South-American trade, too, has become paralysed by revolutions or by the financial collapse of Governments brought about by unscrupulous statesmen. Further, Australasia has been almost beggared by over-speculation, failures, and loss of credit, and England, on the other hand, is still suffering from bad harvests and the results of labour-struggles. Indeed, it is marvellous that our cotton industry has not suffered more under such an accumulation of depressing conditions.

Times like these have, however, existed before, and some, as shown by the many Parliamentary enquiries into trade depression, have been more intense, but whenever, in such times, production of yarn and cloth has outstripped demand, foreign competition, long hours, and low wages of other countries were made responsible for it, and employers immediately set about to obtain a reduction in the wages of their workpeople.

In recent years "Oldham Limiteds" have always been cited as showing the state of trade, although they can hardly be taken as a fair indication of what the cotton trade is doing.

It is interesting to note what Mr. Schoenhof, the American, says of the "Oldham Limiteds":

"Whilst the majority of the mills in Oldham, mostly built in the sixties, cannot show a dividend, the working of the newer mills show most satisfactory results. English employers are very slow

* *Economist*.

† *Textile Recorder*.

in adopting improvements and exchanging less advantageous machinery for more perfected, and the Continent of Europe shows this still in a more aggravated form."*

In Oldham there are large numbers of old concerns insufficiently depreciated, with obsolete carding and drawing frames, &c., whose plant, &c., still stands at 18s. per spindle in their capital account, which have no means of replacing machinery, and no reasonable prospect of ever earning a dividend.

Severe as the depression in trade has been during the last few years, Capital, as a whole, employed therein does not seem to have suffered to any serious extent.

The Income Tax returns for 1886 under Schedule D (profits from trades, &c.) yielded £958,000 to the penny in the pound, and in 1893, "in spite of the ruin which is said to have attended all trades and to have destroyed all profits," it was £1,208,000 to the penny, the highest it ever reached. This additional sum of £250,000 to the penny means an annual increase of profits from trades of £60,000,000, a result surely not so bad for the declining trades of this country.

Whilst our industry has progressed, the development of cotton spinning and weaving in factories has not been neglected abroad. Encouraged by heavy protective tariffs and the success of our own industry, mills have been built in all parts of the world. In the cotton trade of our neighbours we see our own history repeated, manual labour being gradually replaced by the cheaper machine work; and with this economic progress we notice an improvement in the condition of workers and the people generally, which, while it astonishes us, is only a repetition of what has happened at home years ago. They are making up for lost time, and will go on increasing their mills at a rate we cannot hope to equal in the future.

STATE OF THE COTTON INDUSTRY AT HOME AND ABROAD, IN 1882-3 AND 1891-2.

The following tables show population, number of spindles, quantity of cotton spun, and average number of operatives employed

* Schoenhof, "Economy of High Wages."

per 1,000 spindles, in the cotton industry of the principal countries.

The figures for 1882-83 are taken from Mr. Ellison's "Cotton Trade" and I am indebted to him for the indication of the quantity of cotton consumed in each country in 1891-92.

The imports—and our share in them—and the exports of yarn and cotton goods, the hours worked, and the wages paid for spinning and weaving, are given for each country, and I have added the duty charged by each country on single grey yarn, reduced to our weights and currency, which gives a fair indication of the customs tariffs which other countries think necessary for the protection of their cotton industries against our productions.

GREAT BRITAIN.

Population.	Spindles.	Cotton Spun.		Per Spindle.	Per Inhabitant.	Operatives per 1,000 Spindles.
		Spindles per Head.	Quantity.			
1882-3	16,100,000	42,000,000	1'16 1,508,000,000lbs.	34'5lbs.	41'8lbs.	5'71
1891-3	18,200,000	43,270,000	1'18 1,544,000,000lbs.	34'2lbs.	40'4lbs.	4'86

660,000 Power Looms.

1893.		1893.		1893.	
Total Imports.	Cotton Yarn	Total Exports.	Cotton	Re-Export	Cotton
of all sorts.		{ 206,601,600lbs.		Manufactures.	
		{ 49,959,984			
£2,555,520.		{ 4,653,501, 300yds.		£360,748	
		{ 447,294,246			
Miscellaneous Cotton Manufactures		£7,422,950			

HOURS OF LABOUR IN COTTON MILLS, 56½ HOURS

PER WEEK.

Mule Spinners' Wages	36s. to 42s. per week.
Fing " "	12s. to 15s. "
Weavers " "	15s. to 27s. "

GERMANY.

Population.	Spindles.	Cotton Spun.		Per Spindle.	Per Inhabitant.	Operatives per 1,000 Spindles.
		Spindles per Head.	Quantity.			
1882-83	45,234,000	4,800,000	0'10 321,600,000lbs.	67lbs.	7'11lbs.	...
1891-92	50,320,000	6,071,000	0'12 520,000,000lbs.	86lbs.	10'33lbs.	8-9

235,000 Power Looms.

1893.		1893.		1893.	
Imports.	Imports from England.	Exports.			
Cotton Yarn £2,192,600	£1,444,348 (28,384,600lbs.)	£881,910 (17,590,000lbs.)			
Cotton Goods £340,930	£609,707 (45,273,600yds.)	£7,662,600 (73,620,000lbs.)			
		Of which £4,113,000			
		hosiery, laces, &c., and			
		£3,000,000 dyed and			
		printed goods.			

** Excess probably accounted for by goods in transit to other countries.

HOURS OF LABOUR IN COTTON MILLS, 60 to 70 PER WEEK (SUBJECT TO ARRANGEMENT).

Spinners' Wages, 18s. to 24s. per week.	
Weavers' Wages, 11s. " 13s. " "	
Hand-loom Weavers' Wages, 5s. " 6s. " "	
Hours, 96 to 102 per week.	

DUTY ON SINGLE GREY YARN.

Up to No. 17 English.	Above No. 17 to No. 45.	Above No. 45.
0'64d. per lb.	0'96d. per lb.	1'28d. per lb.

SWITZERLAND.

Population.	Spindles.	Cotton Spun.		Per Spindle.	Per Inhabitant.	Operatives per 1,000 Spindles.
		Spindles per Head.	Quantity.			
1882-83	2,846,000	1,900,000	0'66 49,400,000lbs.	26lbs.	17'35lbs.	...
1891-92	3,000,000	1,722,000	0'57 60,000,000lbs.	35lbs.	20lbs.	6 5

24,000 Power Looms.

1893.		1893.		1893.	
Total Imports.	Imports from England.	Total Exports.			
Cotton Yarn... 718,500lbs.	Not recorded.	3,011,900lbs.			
Cotton Goods.. 5,284,000lbs.	Do.	15,925,200lbs.			
Excluding certain					
Fancy Goods.				Excluding certain	
				Fancy Goods.	

HOURS OF LABOUR IN COTTON MILLS, 66 PER WEEK.

Spinners' Wages.....	17s.	"
Weavers' Wages.....	12s.	"

DUTY ON SINGLE GREY YARN.

0'30d. per lb.

RUSSIA (including Poland).

Population.	Cotton Spun.		Quantity.	Operatives		
	Spindles.	per Head.		Per Spindle.	Per Inhabitant.	per 1,000 Spindles.
1882-83	84,058,000	4,400,000	0'05	264,000,000lbs.	60lbs.	3'14lbs.
1891-92	100,430,000	6,000,000	0'06	360,000,000lbs.	60lbs.	3'58lbs.

Includ-
ing Asia 119,870,000

200,000 Power Looms.

	1892.	1892.	1892.
	Total Imports.	Imports from England.	Total Exports.
Cotton Yarn	4,572,000lbs.	1,023,100lbs.	55,000lbs.
Cotton Goods	£349,689	Not recorded.	2,358,000lbs.
			Excluding Asiatic frontier.

HOURS OF LABOUR IN COTTON MILLS, 70 TO 84 PER WEEK.

Spinners' Wages	10s. to 18s.	"
Weavers' Wages	8s. to 14s.	"
Head Piecers' Wages	6s. to 8s.	"

DUTY ON SINGLE GREY YARN.

Lower Nos. than No. 40.	From No. 40 to 50 (both inclusive).	Higher Nos. than No. 50.
4'42d. per lb.	6'02d. per lb.	8'97d. per lb.

FRANCE.

Population.	Cotton Spun.		Quantity.	Operatives		
	Spindles.	per Head.		Per Spindle.	Per Inhabitant.	per 1,000 Spindles.
1882-83	17,677,000	4,800,000	0'13	249,600,000lbs.	52lbs.	6'62lbs.
1891-92	19,000,000	5,040,000	0'13	280,000,000lbs.	55'5lbs.	7'20lbs.

Power looms not recorded.

	1893.	1893.	1893.
	Total Imports.	Imports from England.	Total Exports.
Cotton Yarn.....	11,710,000lbs.	8,059,600lbs.	2,350,000lbs.
Cotton Goods	£685,000 including thread.	£485,624	£122,000
	...	29,508,400yds.	...
	£1,286,000. Including all cotton manufactures and mixed goods.	£524,106	£3,984,000. Including all cotton manufactures and £330,000 of mixed goods.

HOURS OF LABOUR IN COTTON MILLS, 66 TO 70 PER WEEK.

Spinners' Wages	16s. to 24s.	"
Weavers' Wages	10s. to 16s.	"

DUTY ON SINGLE GREY YARN.

Below No. 18½.	No. 18½ and under 24½.	No. 24½ and under 30.	No. 30 and under 36.
0'65d. per lb.	0'80d. per lb.	0'95d. per lb.	1'21d. per lb.
No. 36 and under 42.	No. 42 and under 48.	No. 48 and under 53½.	No. 53½ and under 59½.
1'51d. per lb.	1'73d. per lb.	1'94d. per lb.	2'16d. per lb.
No. 59½ and under 71½.	No. 71½ and under 83½.	No. 83½ and under 95.	No. 95 and under 107.
2'60d. per lb.	3'03d. per lb.	3'47d. per lb.	4'10d. per lb.
No. 107 and under 119.	No. 119 and under 130½.	No. 130½ and under 142.	No. 142 and under 154.
4'75d. per lb.	5'63d. per lb.	6'48d. per lb.	7'76d. per lb.
No. 154 and under 186.	No. 186 and under 201½.	No. Above 201½.	
9'09d. per lb.	11'26d. per lb.	13'39d. per lb.	

BELGIUM.

	Population.	Cotton Spun.		Quantity.	Operatives		
		Spindles.	per Head.		Per Spindle.	Per Inhabitant.	per 1,000 Spindle.
1882-83	5,586,000	840,000	0'15	62,160,000lbs.	74lbs.	11'13lbs.	...
1891-92	6,200,000	930,000	0'15	68,000,000lbs.	73lbs.	10'97lbs.	...

Power looms not recorded.

	1893.	1893.	1893.
	Total Imports.	Imports from England.	Total Exports.
Cotton Yarn.....	2,617,300lbs.	7,085,800lbs.	4,126,000lbs.
Cotton Goods	7,637,900lbs.	55,320,700yds.	13,708,400lbs.

HOURS OF LABOUR IN COTTON MILLS, 66 TO 72 PER WEEK.

Spinners' Wages, 13s. to 20s.; women, 12s. to 14s.	"
Weavers' Wages.....	11s. 3d. to 17s.

DUTY ON SINGLE GREY YARN.

Below No. 23½	No. 23½ and under 35½	No. 35½ and under 47½	No. 47 and under 77
0'65d. per lb.	0'87d. per lb.	1'30d. per lb.	1'74d. per lb.

HOLLAND.

	Population.	Spindles.	Cotton Spun.				Operatives per 1,000 Spindles.
			Spindles per Head.	Quantity.	Per Spindle.	Per In-habitant.	
1882-83	4,382,000	250,000	0'06	21,750,000lbs.	87lbs.	5lbs.	...
1891-92	4,652,000	260,000	0'06	26,000,000lbs.	100lbs.	5'6lbs.	6'54

20,160 Power Looms.

	1892.	1892.	1892.
	Total imports.	Imports from England.	Total Exports.
Cotton Yarn	46,024,000lbs.	36,070,200lbs.	20,879,000lbs.
Cotton Goods	£741,310	£660,536 50,630,400yds. }	35,260,000lbs.

HOURS OF LABOUR IN COTTON MILLS, 58 TO 66 PER WEEK.

Spinners' Wages	15s. to 26s.	"
Weavers' Wages	10s. to 18s.	"

No DUTY ON SINGLE GREY YARN.

ITALY.

	Population	Spindles	Cotton Spun.				Operatives per 1,000 Spindles.
			Per Head.	Quantity.	Per Spindle.	Per In-habitant.	
1882-83	18,469,000	1,150,000	0'04	94,300,000lbs.	82lbs.	3'31lbs.	...
1891-92	1,900,000	1,686,000	0'053	160,000,000lbs.	95lbs.	5'02lbs.	13

59,917 Power Looms.

	1892.	1892.	1892.
	Total Imports.	Imports from England.	Total Exports.
Cotton Yarn.....	3,400,000lbs.	1,553,600lbs.	1,319,400lbs.
Cotton Goods. ..	14,155,000lbs.	42,212,400yds.	578,000lbs.

HOURS OF LABOUR IN COTTON MILLS, 66 TO 84 PER WEEK.

Spinners' wages: Men, 10s. to 16s.; Women, 4s. 6d. to 6s. 6d.	"
Weavers' wages: Men, 10s. to 16s.; Women, 4s. 6d. to 5s. 9d.	"

DUTY ON SINGLE GREY YARN.

No.	No.	No.	No.
Up to 11 $\frac{3}{4}$	12 to 23 $\frac{3}{4}$	24 to 35 $\frac{1}{2}$	36 to 48
0'8 d. per lb.	1'08d. per lb.	1'35d. per lb.	1'62d. per lb.
48 to 59	59 $\frac{1}{2}$ to 70 $\frac{1}{2}$	above 70 $\frac{1}{2}$	
2'02d. per lb.	2'34d. per lb.	2'70d. per lb.	

Mr. Dragé's report on "Labour in Italy" gives the number of spindles as 1,800,000, and the operatives employed in spinning mills 70,000. The above figures are, however, given by the Director of Statistics in Rome and are more likely to be correct.

SPAIN.

	Population.	Spindles.	Cotton Spun.				Operatives per 1,000 Spindles.
			Per Head.	Quantity.	Per Spindle.	Per In-habitant.	
1882-83	16,938,000	1,865,000	0'11	98,845,000lbs.	53lbs.	5'83lbs.	...
1891-92	18,100,000	2,050,000	0'11	132,000,000lbs.	64lbs.	7'29lbs.	...

66,000 Power Looms.

	1893.	1893.	1893.
	Total Imports.	Imports from England.	Total Exports.
Cotton Yarn...	2,116,600lbs.	None recorded.	Estimated 1,500,000lbs.
Cotton Goods.	1,649,000lbs.	Do.	20,338,000lbs.

HOURS OF LABOUR IN COTTON MILLS, 66 TO 80 PER WEEK.

Spinners' Wages	14s. "	18s. "
Weavers' Wages	10s. "	15s. "

DUTY ON SINGLE GREY YARN.

No.	No.
Up to 36 $\frac{1}{2}$	37 $\frac{1}{2}$ and over.
3'23d. per lb.	4'28d. per lb.

AUSTRIA.

	Population.	Spindles.	Cotton Spun.				Operatives per 1,000 Spindles.
			Per Head.	Quantity.	Per Spindle.	Per In-habitant.	
1882-3	37,882,000	1,950,000	0'05	171,600,000lbs.	88lbs.	4'53lbs.	...
1891-2	42,000,000	2,400,000	0'057	233,000,000lbs.	97lbs.	5'55lbs.	13

1890.....47,917 Power Looms, and 26,500 Hand Looms.

	1892.	1892.	1892.
	Total Imports.	Imports from England.	Total Exports.
Cotton Yarn	22,572,000lbs.	3,439,200lbs.	3,664,000lbs.
Cotton Goods...	2,104,000lbs.	4,157,800yds.	6,170,000lbs.

HOURS OF LABOUR IN COTTON MILLS, 72 TO 80 PER WEEK.

Spinners' wages...Male, 9s. 3d. to 13s; female, 6s. 6d. to 10s.	"
Weavers' " ... " 8s. 10d. " 15s; " 6s. 6d. " 10s.	"

DUTY ON SINGLE GREY YARN.

No.	No.	No.	No.
1 to 12.	Above 12 to 29.	Above 29 to 50.	Above 50.
0'53d. per lb.	0'71d. per lb.	1'24d. per lb.	1'42d. per lb.

UNITED STATES OF AMERICA.

	Population.	Spindles.	Spindles Per Head.	Cotton Spun.			Operatives per 1,000 Spindles.
				Quantity.	Per Spindle.	Per In- habitant.	
1882-83.	50,445,000	12,660,000	0.25	943,938,000lbs.	74.5lbs.	18.71lbs.	...
1891-93.	65,000,000	15,600,000	0.24	1,230,800,000lbs.	79lbs.	18.93lbs.	...

324,866 Power Looms in 1890.

1892-1893.	1893.	1892-1893.
Total Imports,	Imports from England.	Total Exports.
Cotton Yarn 1,748,000lbs.	Not recorded.	None.
Cotton Goods..... 45,777,000yds.	64,407,800yds.	143,809,000yds.

HOURS OF LABOUR IN COTTON MILLS, 60 TO 66 PER WEEK.

Carders Wages	28s.	,
Mule Spinners' Wages	30s. to 33s.	,
Ring Spinners' Wages.. ..	19s. to 21s.	,
Weavers' Wages	25s. to 35s.	,

DUTY ON SINGLE GREY YARN.

										Duty.
If value of Yarn under 1s. 0 ^d . per lb.										5d. per lb.
" " from 1s. 0 ^d . to 1s. 8d. per lb. ...										9d. "
" " " 1s. 8d. " 2s. 1d. "										11 ^d . "
" " " 2s. 1d. " 2s. 6d. "										1s. 2d. "
" " " 2s. 6d. " 3s. 11d. "										1s. 4 ^d . "
" " " 3s. 11d. " 3s. 4d. "										1s. 7d. "
" " " 3s. 4d. " 4s. 2d. "										2s. "
" " over 4s. 2d. per lb. pay 50 per cent. ad val.										

INDIA.

	Population.	Spindles.	Per head.	Cotton Spun.			Operatives per 1,000 Spindles
				Quantity.	Per Spindle.	Per Inhabitant.	
1885	266,030,000	2,146,000	'008	234,000,000lbs.	109lbs.	'88lb.	...
1893	294,030,000	3,576,000	'012	459,000,000lbs.	118lbs.	1'57lbs.	29'36

Operatives in spinning and weaving mills.....	In 1885	67,186
" " "	In 1893	121,500
Power looms.....	In 1885	16,537
" " "	In 1893	28,164

	Imports.	Imports from England.	Exports.
Cotton yarn	1884-5.	1885.	1884-5.
	45,810,000lbs.	41,613,000lbs.	65,897,000lbs.
	1891-2.	1892.	1891-2.
	50,404,000lbs.	39,659,000lbs.	161,253,000lbs.
	1892-3.	1893.	1892-3.
	38,277,000lbs.	38,617,000lbs.	189,175,000lbs.
Cotton goods.	1884-5.	1885.	1884-5.
	1,746,232,000yds.	1,675,092,000yds.	47,908,000yds.
	1891-2.	1892.	1891-2.
	1,882,688,000yds.	1,866,148,000yds.	73,351,000yds.
	1892-3.	1893.	1892-3.
	1,808,054,000yds.	1,903,236,000yds.	79,679,000yds.

HOURS OF LABOUR IN COTTON MILLS, 72 TO 80 PER WEEK.

Spinners' wages	6s. 3d. to 7s. 10d.
Piecers' wages.....	1s. 10½d to 2s. 6d.
Weavers' wages.....	7s. to 8s.

NO DUTIES LEVIED ON YARN.

JAPAN.

1893.		Cotton Spun.				Operatives	
Population.	Spindles.	Spindles per Head.	Quantity.	Per Spindle.	Per Inhabitant.	per 1,000 Spindles.	
42,000,000	538,000	'013	...	...	...	...	...
...	345,000 working.	'008	51,869,000 lbs.	150	34 lbs.	1,231 lbs.	23 hrs. — 72'36
			For six months	ending June 30th.			11½ — 36'18
		1888	1892	1888	1892	1892	
		Total Imports.		Imports from England.		Exports.	
Cotton Yarn.	£2,239,071	£1,066,176	£1,007,063	{ £394,474† £767,000*		£1,000	
			27,168,400 lbs.	{ 23,384,900 lbs.† 77,580,700 yds.†			
Cotton Goods	£783,671	£2,162,130	£788,619	{ £78,261† 77,580,700 yds.†		£111,000	

HOURS OF LABOUR IN COTTON MILLS, 69 TO 70 PER WEEK, BUT ALL MILLS WORK DAY AND NIGHT WITH TWO SETS OF HANDS.

Mule Spinners' Wages	1s. 10½d. to 3s. per week.
Ring Spinners' Wages	1s. 3d. to 1s. 0d. ..

DUTY ON SINGLE GREY YARN.

0.29d. per lb. all round.

* Japanese returns. † English returns.

The preceding tables show, during the last ten years, a progress in the development of the industry by an addition of spindles per inhabitant in the following countries:

England	0'020	spindles per inhabitant
Germany	0'020	" "
Italy	0'013	" "
Japan	0'013	" "
Russia	0'010	" "
Austria	0'007	" "
India	0'004	" "

Whilst the proportion of spindles to the number of inhabitants has remained the same in France, Holland, Belgium, Spain and, practically, in the United States, a distinct decrease of 0'09 in this respect has taken place in Switzerland.

From the consumption of cotton per spindle, it would seem as if the spinning of finer counts was not progressing rapidly abroad.

GERMANY.

CONDITION OF COTTON OPERATIVES IN GERMANY.

In examining the state of the cotton industry in Germany, we notice that in 1882, there were still 440,573 people working in groups of less than five persons in an establishment, in the textile trades. Fewer machinery would necessitate more than five people in a mill; consequently the number working in their own homes must have been, and still is, very large. A total of 754,550 persons were so employed in 1882. Well, therefore, may Professor von Schulze Gaevernitz compare the industrial Germany of to-day with the England of 1834.

Spinning and weaving are still done in a great many rural homes by poor workers whose longest hours will not provide enough food to satisfy the cravings of hunger. Let us examine the budgets of two working men in Germany at the present time. From Professor von Schulze Gaevernitz's "Grossbetrieb":

Husband.	Wife.	4 children—2 working
Earning ... 15/-	—	Together ... 7/- ... Total 22/-

<i>Expenditure.</i>		Marks.
Ryebread, second quality ...	42lbs. ...	5.60
Rolls	2lbs. ...	2.00
Wheat Flour	2lbs. ...	.40
Meat, Sundays only	$\frac{3}{4}$ lb. }	.45
Lard	$\frac{1}{2}$ lb. }	
Vegetables ... ..	...	3.40
Potatoes	30qts. ...	1.80
Corn Coffee ... ..	...	.20
Butter	2 $\frac{1}{2}$ lbs. ...	3.40
Skimmed milk	6qts. ...	.60
Rent ... ..	...	3.20
Workmen's Insurance ... ..	...	.65
School Pence ... ..	...	.15

Marks 21.85 = 21/10

From Mr. Schoenhof's "Economy of High Wages":—This case of a man owning his house, and with aggregation of earnings, presents a much more favourable aspect. Father and mother out of work; son earning 12s. to 18s.; daughter earning 10s. a week. Total earnings of father and mother in previous year, £31. Four adults, three children:

<i>Expenditure.</i>		Marks.
Bread, Flour, and Milk ... ..	...	8.24 $\frac{1}{2}$
Butter ... ..	...	2.00
Beef (Sundays)	1 $\frac{1}{2}$ lb. ...	.90
Pork, salted	2lbs. ...	.97 $\frac{1}{2}$
Sausage	1lb. ...	.80
Potatoes, Vegetables, & Coffee ... ..	...	2.15
Sugar, Oil, Soap ... ..	...	.84
Beer ... ..	...	1.20
Clothing ... ..	...	4.08
Fuel and Light ... ..	...	.80
Interest on Mortgage and Repairs ... ..	...	2.70

Marks 24'69 = 24/8

The Consular Report, No. 283, Foreign Office Series, gives the incomes of German textile workers, taken from the Workmen's Government Accident Insurance Statistics. They vary from Marks 380 p.a. in Saxony, to Marks 603 p.a. in Rhineland and Westphalia, and average Marks 523, for the whole of Germany, or 10s. 7d. per week each person—the average income of our operatives in 1830 to 1840.

In addition to this, compare the dearer food prices in Germany given by Prof. von Schulze Gaevernitz in "Der Grossbetrieb," and you see that the English operative not only enjoys higher wages but that his money will buy for him many more comforts and better food. Mr. Schoenhof continues: "A German working-man to-day cannot live as well as an English working-man one hundred years ago, poorly as the latter was situated, compared to the conditions of to-day. Scarcely any meat, everything cut down to the lowest possible point, such workers cannot compete with the highly paid, well nourished, and vigorous English operative."

Can we be astonished that working-men living under such conditions are ardent Socialists, just as our operatives fifty years ago were Chartists?

STATE OF THE INDUSTRY IN GERMANY.

The spinning and weaving mills employing power are still very scattered all over Germany and other parts of the Continent—many mills still existing with only a few hundred spindles and a few looms—but in Germany a gradual concentration of factories in Saxony, Favia, and Alsace is becoming noticeable.

In England self-actors have practically been at work for forty years; in Germany the change has only taken place during the last twenty years, and German manufacturers are still very slow in replacing old machinery.

The average number of spindles in Germany per pair of self-actors is, according to Prof. von Schulze Gaevernitz, 1,300 to 1,600, with one spinner and four piecers: against 2,000 spindles, one spinner and two piecers, in England.

New mills are, however, being equipped with the very best English machinery, no improvement left out, and, as one large English machinist states: "The Germans will have all the newest and best machinery that money can buy—they feel it is cheaper for them in the long run."

COMPARISON OF HOURS, WAGES, AND LABOUR-COST.

The following table, taken from Prof. von Schulze Gaevernitz ("Grossetrieb,") is most instructive, and gives a very clear picture of the labour cost of spinning cotton yarn (excluding preparation and carding) in Germany and Switzerland, as compared with England:—

	No. of Spindles per Pair of Self- Actors	No. of Operatives, Spinners, Piecers	Length of Stretch, Inches	Seconds of Draw	Hours per Week	Weekly Production per Pair of Self- Actors	Labour Cost per Spinning Pair of Self- Actors, Money	Wages of Spinning Pair of Self- Actors, Money	Average Wages per Piec- er, in Shillings	Number of Spindles per Spinning Master	Wages of Spinning Master, Shillings
12s Metric Chain = English No. 1416	Vosges 1272	2	63	13	66	4194	0.211	20/7	10/7	10-20,000	34/4-39/3
	Mulhouse 1280	1	61	12.5	66	4525	0.170	23/6	13/3	10-20,000	34/4-39/3
28s Metric Chain = English No. 3304	Vosges 1272	2	63	15	66	1987	0.480	20/7	10/7	10-20,000	34/4-39/3
	Mulhouse 1280	1	61	14	66	1633	0.379	23/6	13/3	10-20,000	34/4-39/3
20s Twist English..	Bavaria 1508	1	64	15	65	2420	0.228	17/8	10/6	15,000	26/6
	Württemberg. 1200	1	65	15	65	1900	0.312	20/7	10/4	15,000	26/6
	Saxony 2000	1	68	14	64	3600	0.204	21/7	10/9	10,000	34/4
	Oldham 2208	1	66	13	55	3435	0.216	44/2	14/11	—	—
30s Twist English..	South Germany 1472	1	63.8	16	65	1340	0.404	20/7	7/7	15,000	19/7-29/5
	Bolton 2064	1	64	14.6	55	2200	0.390	45/2	12/6	—	—
36s Twist English..	South Germany 1472	1	63.8	19	65	1095.5	0.480	20/7	7/7	15,000	19/7-29/5
	Switzerland ... 1200	1	65	17	65	850	0.468	17/8	7/5	11,400	21/2
	Saxony 1704	1	65.2	15	65	1530	0.402	20/7	7/10-12/9	5,000	19/7-24/6
	Oldham 2000	1	68	14	64	1800	0.384	21/7	8/10-12/9	10,000	34/4
	Oldham 2376	1	67	13	55	2182	0.390	37/8	17/8	—	—
	Oldham 2688	1	67	13	55	2723.6	0.344	39/5	12/8	—	—
40s Twist English ...	Oldham 1560	1	65	13	55	1222	0.600	33/5	14/2	—	—
	Oldham 2400	1	64	13	55	1050	0.500	30/6	10/4	—	—
60s Twist English..	Alsace 1248	1	66	22	69	530	1.170	20/7	12/3	12-15,000	28/0
	Bolton 1632	1	66	17.7	55	3373	1.170	29/3	10/9	—	—
120s Twist English..	Alsace 1264	1	65	28	60	258	2.730	21/2	10/2	8,000	28/0
	Bolton 2280	1	58	21	55	3333	2.073	42/2	10/9	—	—

In comparing this labour cost of spinning, we must take into account that everywhere on the Continent they require overlookers or spinning-masters for the spinning department, whose salary should be added to the labour cost per lb. for spinning, and this will turn what slight advantage there seems to be on some numbers into a distinctly dearer wages cost of the foreign production, in spite of longer hours and lower wages.

It is, however, a fact that well managed modern mills in Germany, Switzerland, Holland, and Belgium are able to produce coarse counts, say up to No. 20's, at about the same labour cost as our own. Their machinery is frequently driven at a higher speed than in this country, which results in a larger output of yarn.

It is not the province of this paper to dwell on the other great disadvantages of German spinning and weaving; but a few figures ought to convince the strongest pessimist in this country, that on other grounds than labour cost, a German spinner or manufacturer cannot hope to compete with us in the great trade of the world.

Professor von Schulze Gaevernitz gives the following cost per spindle for the erection of spinning mills:—

Counts.	Oldham.	Alsace.	Rest of Germany.
No. 20 ...	24/-	60/-	—
2—40 ...	20/-	50/-	45/- to 60/-
60 ...	26/6	—	—

and for weaving mills per loom :

Burnley.	Germany.
£18-19	£33-75

and states that the cost in France is even higher than in Germany.

The comparison of the wages cost of cloths made in different countries is much more difficult than that of yarn, owing to their variety and different description, but we owe to Professor von Schulze Gaevernitz's careful investigation the following information:—

	Number of Picks per minute.			
Width.	England.	Switzerland.	Alsace.	
32, 34 in. ...	240	190—200	150—160	
41 " ...	200	160—170	130—140	
51 " ...	180	150—160	120—125	
60 " ...	150	120—130	110—115	

Alsation Mills average 140 picks per minute. The German Government Enquiry mentions that the average loss in production in England through changing, faults, &c., is, with 240 picks per minute, 16·6 per cent, and at a lower speed only 8 per cent, whilst the loss from the same causes in Alsace amounts to 20—30 per cent.

"It follows," says Professor von Schulze Gaevernitz, "that if English looms work at 30 per cent. more speed, showing 10 per cent less loss, that with 15 per cent. shorter hours, the product per week must be greater."

This further example was furnished by Mr. Schoenhof to Professor von Schulze Gaevernitz:—

	28" 64 × 64	Printing Cloth.		
	Wage of operative.	Weekly Product per operative.	Cost per yard.	Hours.
Germany and Switzerland }	11/8	466yds.	0·303d.	72
England.....	16/3	706 "	0·275d.	54
America.....	20/3	1,200 "	0·200d.	60

Whilst in Germany a weaver attends to 2, and exceptionally only to 3 looms, the English weaver superintends 4 to 6 looms.

Having extensively quoted from Professor von Schulze Gaevernitz, whose book, "Der Grossbetrieb," is now being translated, and should be carefully studied by everyone interested, we turn to examples from the Report of the United States Commissioner of Labour.

Mill 13 (See Appendix)

Spinning 28's mule twist gives—

Labour cost of Carding.....	0·4315d.
" " Spinning	0·3345d.

" in 60 hours 0·7660d. per lb.

The English cost would be : in 56½ hours—0·6600d. per lb.

Mill 92.

Weaving 36 in. 67 × 73 picks, 33's warp, and 44's weft, and giving 170 picks per minute, the labour cost per yard was 0·3647d. in 60 hours.

In England this would amount to 0·3250d. per yard in 56½ hours.

It is, however, not the price only which attracts buyers of cotton goods; and whatever monopoly we may possess in the labour cost of spinning and weaving, there is, and can be no doubt that in artistic taste, colouring, and finish, we lag behind the highly-developed and specialised industries for high-class woven, printed, and dyed goods on the Continent, and more especially in Germany.

With increasing wealth, our own and foreign consumers look often for a higher and better-finished article than our industries are at present producing. Owing to technical schools and the general advance in education, we undoubtedly have made progress in design and colour, as the increasing exports of printed and coloured cottons testify; but our neighbours, well knowing that they cannot compete with us in price, have made numbers of articles of comparatively smaller consumption a special study. They produce prints, hosiery, embroideries, lace, net, scarfs, cotton trouserings, and other articles in a variety of beautiful designs, with a brilliancy of colouring and perfection of finish which we cannot equal here. They often possess special machinery for this class of goods, such as does not exist in this country, and the indomitable energy of the German and Swiss houses abroad pushing the sale of the productions of their native lands, the excellent support they receive from their Consular agents, are qualities which Englishmen might well emulate.

The finishing and improving of goods are so much superior to our own that quantities of grey goods are annually sent abroad for the "Veredlung's process," under which goods can be imported into Germany, that are intended for re-exportation in a more advanced state of manufacture, without paying duty. Such goods are frequently returned to England for shipment abroad, and in our trade statistics figure twice as exports, and once as imports.

It would be most instructive to know what loss of wages we sustain by not being able to print, dye, and finish goods equal to our competitors on the Continent.

German manufacturers are gradually seeing the error of their ways, as regards hours, and a slow decrease in the working time is noticeable everywhere, whilst the wages of the cotton factory operatives are also advancing. With shortened hours and increased earnings, a higher productiveness, and higher efficiency of labour are certain to be obtained, and competition will spring up where it does not exist at present.

PROGRESS OF LABOUR AND THE REDUCTION OF WORKING HOURS IN GERMANY AND ELSEWHERE ON THE CONTINENT.

The following is from the report of Consul General Oppenheimer, of Frankfurt, to the Foreign Office, on "Labour Time and Labour Wages in Germany."

After speaking of the very irregular hours worked in cotton mills, the want of protection given to the operatives and the progress of the industry, the report proceeds: "But, nevertheless, though tardy and slow, even in Germany the idea is beginning to gain ground that a reduction in the time of labour is strongly advisable in the national interest; and it is seen more and more clearly that such a reduction, if universally carried through, would not be injurious to the single factories, but would make them and their workmen more productive, grant to the entire working of the national industry a better organisation, and ensure its future more effectively." And again, with reference to the influence of the reduction of labour time on production, the reports for the year 1891 contain the following remarks: "According to the statements of some factory owners no reduction at all in production can be noted in the weaving establishments, in consequence of the shorter worktime, and only a slight reduction is noticeable in the spinning trade; it is expected that with proper changes in the factories the former production will again be reached in the spinning factories. One employer said, that notwithstanding the reduction of the worktime from 12-12½ hours to 11 hours, his fall-off in production of goods (spinning and weaving) was only 3 per cent., but that the quality of the same had been greatly improved. Others express

themselves similarly, and a spinning mill proprietor said the success of the reduction in the labour time had been so beneficial, that, as soon as the workmen would express their wishes to that effect he would reduce his 11 hours worktime by a further hour; he was convinced that not only the workmen, but also he himself, would be benefited."

Messrs. Faber, of Seltowitz, in Moravia, thread and lace manufacturers, found as a result of trial that their workpeople produced more, and increased their earnings in a $7\frac{1}{2}$ hour day against a $9\frac{1}{2}$ hour day previously, and they have now adopted the $7\frac{1}{2}$ hour day. Short hours, says the manager, mean increased efficiency, less time being wasted.

In Switzerland, an 11 hour day was introduced in 1878, and the result was in many cases a cheaper and increased production; on the whole at least, no loss to the industry. Only concerns with obsolete machinery and proportionately low wages were permanently injured.*

Dr Schuler, a factory inspector, reports of an old mill where the machinery could not be speeded very much, that the production was:

In 1877..... 12 hours, 372 Kos.

And in 1878 11 hours, 388 Kos.

Our Continental competitors could not reduce the working hour: to eight all at once, even if we were to do so. "A reduction in the hours must be justified by the productive ability of the workers, and the application of the most improved methods of manufacture, implying a better paid and better conditioned labour."†

The reduction of hours in Germany, and the rest of Europe, will take place as their industry advances, and an attempt to obtain a reduction of working hours by international agreement must fail, as the conditions of labour and methods of manufacture vary so considerably in different countries.

* Professor von Schulze Gaevernitz.

† Mr. Schoenhof.

We have given this very exhaustive report of the industry in Germany, seeing that she is the most important, most advanced, and most progressive Continental producer of cotton goods.

INCREASE IN THE FOREIGN COTTON TRADE OF GERMANY.

The exports of Germany were as follows:

	Yarn.	Cotton Manufactures.
1883.....	£1,250,000	£3,650,000
1893.....	£891,900	£7,662,600
	Of which £4,113,000 Hosiery, Laces, Net, Smallwares, &c.	
	And..... £3,000,000 Dyed, Printed, and Coloured Goods.	

The decrease in exports of yarn should be noticed, but the extraordinary feature of the German cotton industry is the large proportion hosiery, laces, smallwares, &c., bear to the total exports of cotton manufactures. They amount to 53·7 per cent, whilst in England these descriptions amount to 8 per cent of the total exports.

The remainder of the German exports of cotton goods consists almost exclusively of dyed, printed, and coloured materials.

SWITZERLAND.

Switzerland's trade has suffered like our own by the depreciating silver currency, and the troubles in South America. Her spindles have decreased and her exports have fallen off to a very alarming extent. India, The Straits, and the East generally have always been splendid markets for Swiss cotton productions, both yarn and goods.

Her imports of cotton yarn and goods decreased, in 1892, £512,731, and the value of the exports of yarn and goods in the same year decreased £604,780.

To some extent this is owing to the cheaper productions of England superseding her expensive goods; still Switzerland has a highly specialised cotton industry, and her exports of such goods as brocades and sateens are increasing.

The spinning of fine numbers is better developed and more efficiently performed in Switzerland than elsewhere on the Continent, as a reference to the weight of cotton spun per spindle will show.

It will also be noticed that in Switzerland the number of operatives per 1,000 spindles is lower than elsewhere, except England.

LABOUR COST IN SWITZERLAND.

A well equipped modern cotton mill in Switzerland produces 138lbs. of 120's twist per 1,000 spindles in a week.

The manager of another mill reports that his weekly production per 1,000 spindles of $\frac{2}{3}$ 96-49's twist is 660lbs., at a labour cost, including machinists and warehouse, of 0.1195 centimes = 1.14d. per lb. in 66 hours, employing 6.10 operatives per 1,000 spindles, against an English cost of 0.95d. per lb. in 56½ hours employing 2.6 persons per 1,000 spindles.

A fine spinning mill gives a production of 150lbs. of 100's mule twist per 1,000 spindles in a week of 60 hours, at a labour cost of 3.59d. per lb., which compares favourably with our labour cost of 3.51d. per lb. in a week of 56½ hours.

The following is a comparison by Professor von Schulze Gaevernitz, of the operatives employed per 1,000 spindles in two similar mills—one in Oldham, the other in Switzerland, both spinning 40's twist.

	Oldham.	Switzerland.
Operatives required for preparation ...	0.31	1.7
" " carding, roving, &c. ...	0.62	1.2
" " spinning ...	1.37	3.3
	<u>2.30</u>	<u>6.2</u>

RUSSIA.

Russia has increased her spindles and looms under a tariff of almost prohibitive duties.

Her large population, both in Europe and Asia, will necessitate a further development of her cotton industry, and owing to her geographical position, increasing demands will be made on her factories by Persia and the vast Central Asian countries bordering

on her frontiers. The condition of labour, however, is very low, and her method of production so expensive, that we need not fear her for many generations as a serious competitor in other lands. The production in value of the cotton industries in Russia, according to the Report of the Russian Minister of Finance, is as follows, in millions of roubles :

	Spinning.	Weaving.	Printing & Dyeing.	Finishing.	Total.
1880	74.1	99.7	61.1	5.5	240,400,000 Roubles.
1889	187.6	222.3	72.8	4.4	487,100,000 „

The production in 1889 was about 10,000,000 poods = 360,000,000lbs. of 23 to 28's yarn.

The average income of the Russian textile workers is said to be 200 roubles = £21 13s. 4d. per annum, but competent authorities consider this too high; 150 to 170 roubles appears more correct.

The cost of a mill per spindle, including workpeople's barracks, managers, overlookers' houses, general hospital, infectious cases and lying-in hospitals, school, gas works, stables, fire-engine shed, &c., is 35 to 40 roubles = £3 15s. to £4 6s. per spindle.

LABOUR COST IN RUSSIA.

The following figures are taken from a very large modern mill, employing twelve operatives per 1,000 spindles and managed by an English director or head manager, one English spinning master and one English carding master to every 75,000 spindles, who are paid about £6 per week each. They are assisted by Russian overlookers for every 10,000 spindles, whose wages are about £3 per month.

The mill contains ring frames and mules, the latter holding 1,200 to 2,000 spindles per pair, and uses Egyptian, American, Tashkent and Bucharian cotton. The loss in weight in carding and spinning was 12 per cent. It produced 34 poods = 1,224lbs. of 30's warp and weft (average) at a labour cost of 1.65 roubles per pood, = 1.19d. per lb., in a week of 81 hours.

It will be seen that we could hardly equal, certainly not exceed, the production per week in quantity, but that in spite of

our weekly wages being thrice as high, and Russian hours being 45 per cent longer, we can produce the yarn at a labour cost of nearly 50 per cent less.

Another source states the labour cost of 26's twist at 108 roubles per pood = 0.78d. per lb. English.

Another, the labour cost of 24's twist at 81 kopecks per pood, = 0.585d. per lb. English, and in this case the total cost of production was 2.48 roubles per pood = 1.79d. per lb. English.

The average price of 34's twist in 1890 was 16.82 roubles per pood = 12½d. per lb.

The labour cost of weaving a piece of 28in., 90 arshines = 70 yards, 8 bs, is stated as 43 kopecks = 11.18d. per piece.

DISADVANTAGES OF THE COTTON INDUSTRY IN RUSSIA.

The following appeared in the *Textile Recorder* some time since, and is an extract from a paper read by Mr. Anofrieff in Moscow, before the Society for Improving and Developing Russian Manufactures:

"He compared the outlays of an English cotton mill with a Russian establishment of the same kind in the Moscow district, and came to the following conclusions, his calculations being based on the expenditure in England and Russia respectively per 1,000 spindles:

Description.	Russian Mill.	English Mill.	Difference in favour of English Mill.
	Roubles.	Roubles.	Roubles.
Cost of construction.....	32,000	11,990	20,010
" fuel	501	171	330
" repairs	148	62	86
" insurance.....	125	29	96
Amortisation	833	382	451
Incidental expenses	520	14	506
Salaries and wages	1,413	1,317	96
Maintenance of workmen ...	123	123	...
Miscellaneous outlays	622	128	494
Total	36,285	14,216	22,069
	= £3,930	= £1,540	= £2,390

In addition to the above cost of production which bears so heavily on the Russian cotton manufacturer, he is obliged to pay *ab initio* a high duty on cotton. With the establishment of the premiums above referred to, which place him on an equality with his British rival in the matter of duty, he will still be heavily weighted and unable to compete either in European or Asiatic markets if Mr. Anofrieff's calculations be correct, until he obtains cheaper fuel and reduces the other charges which place him at a disadvantage with his British and other competitors. Needless to say that in the native market he has until very recently had it all his own way.

FRANCE.

The only other European country which can be said to compete with us is France; and in her case we are able "to see ourselves as others see us"—the *Lloyd Rouennais de la Filature* having made extensive inquiries about the cost of spinning in France and Oldham at the beginning of 1890.

LABOUR COST IN FRANCE.

The following comparisons are taken from *The Mémoire du Lloyd Rouennais de la Filature*:

MILLS FITTED WITH NEWEST MACHINERY FOR CARDING AND SPINNING.			
In Normandy.		In England.	
Cost of Erection.		Cost of Erection.	
50 to 65 frs. (40s. to 52s.) per spindle		20s. to 31s. per spindle.	
Mill—28,000 spindles.....		Mill—78,786 spindles.	
Average count 28's twist French...		Average count 37's twist English	
(equal to 33's twist English) ...		(equal to No. 31.35 twist French)	
Weekly output — 10,800 kilos =		Weekly output — 25,200 kilos =	
23,760lbs.....		55,400lbs.	
Operatives employed, 126.....		Operatives employed, 212.	
Operatives per 1,000 spindles, 4.50		Operatives per 1,000 spindles, 2.69.	
Total weekly wages, 2,490.10 frs. =		Total weekly wages, £232 12s.	
£98 16s.			
Weekly wage per operative,		Weekly wage per operative	
19.70 frs. = 15s. 8d.		£1 1s. 11d.	
Cost of labour (including manage-		Cost of labour (including manage-	
ment, &c.), in 70 hours 22.96 cts.		ment, &c.), in 56½ hours = 1d.	
per kilo = 0.99d. per lb. for		per lb. Equal to 0.86d. per lb.	
No. 28's.		for No. 28's.	

ANOTHER MILL RETURN FROM NORMANDY.

Mill with 21,600 spindles spinning 16's French twist = No. 18'88 English.
 Production per 1,000 spindles, 1,800lbs. per week.
 Operatives, 5'83 persons per 1,000 spindles.
 Operatives, clerks, manager, machinists, &c., 6'99 persons per 1,000 spindles.
 Total cost, including general expenses, depreciation, interest, &c., 17'83 cts. per kilo = 1'63d. per lb. in 70 hours.
 Labour cost, including management, 16'60 cts. per kilo = 0'72d. per lb. in 70 hours.

This compares with our labour cost of about 0'58d. per lb. in 56½ hours.

PRIVATE INFORMATION. MODERN MILL IN FRANCE, 1893.

Cost of construction, 53 frs. = 42s. 6d. per spindle.
 Loss in carding and spinning middling American, 8 per cent.
 Production = 1,058lbs. of 30's twist per 1,000 spindles in a week.
 Five operatives per 1,000 spindles, 2,000 spindles per pair of self-actors.
 One spinner and 3 piecers per pair of self-actors.
 Spinners' earnings.....24s. per week
 Piecers' ".....11s. 6d. per week
 Two spinning masters.....36s. per week each.
 Labour cost 19 cts. per kilo = 0'82d. per lb. in 70 hours.
 Against labour cost in England 0'70d. per lb. in 56½ hours.

FROM AMERICAN CONSULAR REPORTS.
Mill at Roubaix in 1882.

Ring spindles 30's twist, 13'3 persons employed per 1,000 spindles.
 Production per 1,000 spindles = 1,350lbs. per week.
 Hours 72 per week.
 Cost of labour, 1'323d. per lb.
 Mule spinners' wages 25s. per week.
 Ring " 16s. "
 Piecers.....14s. 6d. "
 Weavers, Men18s. "
 " Women.....16s. 6d. "

Monsieur Pouyer Quartier, one of the largest cotton manufacturers in France, gave the difference per annum in the cost of working a loom in Lancashire and in France in 1882 as follows:

In favour of Lancashire—

Interest on machinery.. \$8'68 = 1 15 8
 Cost of coal..... \$5'79 = 1 3 9
 Cost of labour..... \$25'86 = 5 6 3
 Other general expenses \$22'58 = 4 12 8

\$12 18 4

This, Monsieur Pouyer Quartier declares to be a minimum.

FRENCH IMPORTS AND EXPORTS OF COTTON MANUFACTURES.

IMPORTS.		
1883.	1887.	1893.
111,432,000 francs.	81,384,000 francs.	49,286,000 francs.
EXPORTS.		
90,345,000 francs.	117,758,000 francs.	102,641,000 francs.

Under the present prohibitive duties on Foreign productions the French Cotton Trade, both Imports and Exports, will continue to decline.

A very curious fact should be mentioned here. Factory operatives on the Continent, without proper trade organisations, in the sense we understand them, are completely at the mercy of employers, and cry loudest against any reduction in import duties, fearing that it would bring about a fresh reduction in their wages.

COMPARISON OF WAGES AND HOURS IN EUROPE.

Mr. Schoenhof has made a calculation "of the hours the Continental operatives would have to work at the rate of pay they receive now to obtain the same conveniences for which English operatives lay out their wages at free trade prices:

	Average Daily Wages. Cents.	Present Hours.	Necessary Hours.
Germany	48 to 60 ...	11 ...	15¾ to 19¾
Switzerland	54 ...	11 ...	18
France	54 ...	12 ...	19½
Western Bohemia ...	36 ...	12½ ...	30
Eastern "	26 ...	12½ ...	41½
England	86 ...	9 ...	9

The wages of adults only are taken into account. The work is all carried on the same basis, and is nominally the same. I is all machine work driven by steam power, and conducted in factories under the best intellectual management which the countries afford. But how world-wide the results! The poor house-weavers of Bohemia [and in many other parts of the Continent they still linger on] not earning more than 2'20 florins a week, and working 16 to 18 hours a day, would have to work 96 hours to accomplish what England accomplishes in 9 hours."

UNITED STATES.

In turning now to the most efficient of our competitors, whose high productiveness and high wages are the admiration of the industrial nations of the world, and whose working hours come near to our own, we must note first that the increase of spindles in the United States of America during the last ten years is slightly below the proportionate increase in their own population.

Exports of cotton manufactures from the United States:

1883.	1887.	1893.*
\$12,951,000	\$14,929,000	\$11,809,000

These figures show that the foreign trade of the United States in cotton goods is making no headway against us, in spite of their aggressive policy, embodied in reciprocity treaties with some of our best customers. Since 1887 their exports show a decrease of 21 per cent.

Although their new mills have the geographical advantage of being near the cotton fields, and are fitted with the best and most productive spinning machinery which our machine works can turn out, there are no exports of yarn from the United States.

The Report of the Labour Commissioners of the United States for 1891, gives the production of 96 cotton mills—57 Northern and 39 Southern. The average numbers of yarn produced in these mills were 19'67's twist and 21'84's weft, and the recorded productions of 84 weaving mills indicate an average of only 160 picks per minute.

The imports into the United States of Egyptian cotton have, however, considerably increased during the last two years, but we read of the owners of new mills started for these fine counts, loudly protesting against any reduction of duties—50 per cent ad valorem—as they could not compete with England under a lower protection. American authorities calculate that our moist climate alone gives us a clear advantage of 7 to 10 per cent in the spinning of fine numbers.

The Bureau of Statistics of Labour in Massachusetts, published some time ago a return of mills, with the amount of capital invested, and other particulars, and we find out of 137 mills that 50 are returned as making no profit. Mr. Bent, of the Mason Machine

* Fiscal years ending on 30th June.

Works, Taunton, expresses the opinion that the latest machinery for spinning mills has a producing capacity 60 to 80 per cent greater than that erected 20 years ago in America, and we naturally conclude, therefore, that our American cousins have also their worn-out mills.

LABOUR COST IN THE UNITED STATES

The following is taken from Consul Shaw's Report to his Government in 1882.

Comparison of cost of production of Printing Cloth made between a 28in. 56 reed 14 picks, 7lbs. 4oz., 58 yards American cloth, and a similar 32in. English Printing Cloth, which seems fair as the American cloth is made of coarser yarns than the English product.

	Fall River.	Lowell.	Rhode Island.	Pennsylvania.	England.
Blowing and Carding	0'42d	0'46d	0'535d	...	0'3686d
Spinning and Overlooking. 0'61	0'7550	0'631	Items	0'4714	
Winding, Warping, Sizing, and Drawing	0'33	0'3145	0'255	unknown	0'3186
Weaving and Overlooking. 1'78	1'598	1'430	...	2'0304	
Warehouse	0'3135	0'360	...	2'292	
Total cost of Wages per pound of cloth woven, }	3'4535d	3'4410d	3'211d	3'22d	3'4812d
Coal	0'5130d	...	0'0700d	...	0'1700d
Starch (sizing)	0'0440	...	0'0550	...	0'1890
Oil	0'0640	Items	0'0650	Items	0'0610
Stores	0'3265	unknown	0'3225	unknown	0'2330
Sundries	0'0510	motive	0'0500	motive	0'0685
Repairs	0'1700	power	0'1400	power	0'1200
Taxes	0'2350	chiefly	0'0950	entirely	0'0353
Insurance	0'0575	water	0'0500	steam	0'0460
Freight (teaming)	0'0375	...	0'0260	...	0'1560
Brokerage and Commission	0'0570	...	0'0435	...	0'2340
Total	1'5555d	1'3615d	0'9170d	2'52d	1'3128d
Depreciation in America on Mill Buildings, 24% at 16/8 per spindle, 10% on Machinery at 37/6 per spindle	1'10550d	1'10550d	1'005d	1'10550d	...
Depreciation in England on Mill Buildings, 24% at 16/8 per spindle, 10% on Machinery at 12/6 per spindle .....	...	...	...	...	0'551d
Interest on Capital, 5 %	0'95365	0'95365	0'86685	0'95365	0'735
Total cost of interest and depreciation per pound of cloth woven	2'05915d	2'05915d	1'87185d	2'05915d	1'286d

SUMMARY OF COST OF MANUFACTURING PRINTING CLOTH PER LB.

	Wages.	Expenses.	Rent interest and depreciation.	Total.
Fall River	3'4535d	1'5555d	2'05195d	7'06815d
Lowell	3'4410	1'3615	2'05915	6'86165
Rhode Island	3'2110	0'9170	1'87185	5'99985
Pennsylvania ...	3'2200	2'5200	2'05915	7'79915
England	3'4812	1'3128	1'2860	6'0800

The mill at Fall River is driven by steam, the Rhode Island mill, where the cost is lowest, entirely by water, the Lowell mill is chiefly driven by water. Consul Shaw points out that there was not much economy effected by the use of water-power, because the cost of constructing the waterworks was so great as to absorb as much interest of money as coal would cost per year. We may, therefore, fairly add to the cost of production, as given above, an amount equal to what motive power costs in England. With respect also to the items freight or teaming, and brokerage and commission, I ought to say that in America the cost of carriage to the mills is reckoned in the price of the cotton, while commission is paid only on the value of the raw material, and not as is common in Manchester upon the sale of the manufactured article. The owners of the Rhode Island Mill consider that they manufacture at a lower rate than any other mill in America, and Consul Shaw found this confirmed in other quarters.

At a glance we see that our labour cost of spinning is considerably less than in the United States, whilst our weaving apparently comes out slightly more expensive.

Mr. Schoenhof explains this by the higher wages of American weavers—an American weaver earning 32/- against the English weaver 20/-, thus demonstrating again that the highest weekly wage earner is the cheapest producer. An American weaver attends to six—eight looms, giving 160 to 180 picks per minute, against an English weaver with four—six looms going at the rate of 200 to 240 picks per minute.

Mr. Schoenhof gives the following figures from personal investigations :

COST OF MANUFACTURING A POUND OF PRINT CLOTH.

	Average No. 37½'s. Lancashire.	Average No. 32½'s. Lowell.
Labour Cost of Spinning.....	1'708	1'992
Labour Cost of Weaving	4'802	3'736
Cost of Supplies and other Mill Charges...3'175	...	2'823
	9'685 cents	8'551 cents

"We have here a credit of 1'134 cents, mostly due to cheaper labour cost, against which stands a credit of two-ninths pound of yarn in the English cost of seven yards of print cloth. With cotton in England (inclusive of waste) at 11'8 cents, this makes a difference of 3'258 cents, and, deducting cheaper American cost of 1'134 cents, still leaves a balance of 2'124 cents in each seven yards of American cloth ; or, allowing for the difference in the cost of cotton on account of freight to Liverpool of, say, half a cent, about 1½ to 1¾ cents. The American cloth stood (cotton and waste 10.695 cents) at 19'246 cents a pound, or 2'766 per yard, which yard the Englishman is enabled to sell at about a quarter of a cent less to our 'natural customers' by giving them a finer cloth. Though with less cotton and more sizing it seems to be taken by them willingly in spite of our convincing one another of its unwholesomeness and inferiority as to intrinsic quality. It is not necessary to deal *seriatim* with Germany and Switzerland. The fact that the Mulhouse and Elberfeld printers use English print cloth for exportation, in which case they get the import duty refunded, does of itself prove conclusively that they cannot produce as cheaply as England, and far less America, without introducing direct and detailed evidence."

OUTPUT OF PRINTING CLOTH.

In Burnley, 4 looms	980yds. per operative, at 51 cents (2s. 1½d) per 100yds.
„ Lowell, 6 „	1270 & 1350yds. „ at 40 cents (1s. 8d.) „ 100yds.
A 4-loom weaver in Burnley	would average 21s. per week.
A 6-loom „ Lowell „	\$5.08 (21s. 2d.) for 1270yds.
„ „ „	\$5.40 (22s. 6d.) „ 1350yds.

So that a 6-loom weaver in America earns little more than a 4-loom weaver in England, and it is only when you come to 8-loom weavers earning \$6.40 (26s. 8d.) to \$7.30 (30s. 5d.), that the American receives a better remuneration.*

I have given in the appendix a number of American mill returns, taken from the Labour Commissioners' Report, and any one investigating the same will see that in every case we beat them in the labour cost of spinning, whilst the labour cost of weaving is only here and there slightly in their favour.

The following is an illustration of the increase and cheapening in the production of American cotton manufactures under advancing wages:

Two Mills in Massachusetts spinning the yarn and weaving

		36in. sheetings.†			
Yearly Product per Operative.		Cost of Labour per yard.		Yearly Earning of Operatives.	
1830 ...	4,321 yds. ...	1'90cts. = '95d.	...	\$164 — £34	3 0
1850 ...	12,164 yds. ...	1'55cts. = '77d.	..	\$190 — £39	12 0
1870 ...	19,293 yds. ...	1'24cts. = '62d.	...	\$240 — £50	0 0
1884 ...	28,032 yds. ...	1'07cts. = '54d.	...	\$290 — £60	8 0

We must mention here the Report of the Bureau of Statistics of Labour, published in 1881, on the reduction of hours which had taken place in Massachusetts:

"It is apparent that Massachusetts, with 10 hours, produces as much per man, or per loom, or per spindle, equal grades being considered, as other States with eleven or more hours; and also that wages here rule as high, if not higher, than in the States where the rules run longer time."

The hereditary skill of our mule spinners and operatives, and the evolved adaptability for their work, are not possessed by the Americans, nor can they at all compete with us in the higher class articles of the cotton trade. Their prints and dyed goods show a crudeness of colouring and a defective production which even Mr. Schoenhof acknowledges, in spite of his patriotic American lean-

* "Economy of High Wages," † Atkinson.

ings. As we lag behind some of the Continental producers of high-class cotton goods, so are the Americans generations behind us in the matter of colouring and finish. Further, American yarn is much inferior in quality of work, and importers maintain that there always will be a market for English spinnings in the States, owing to their superior quality.

Mr. Schoenhof says that the American manufacturers pay 50 per cent *ad valorem* duty on English yarn, even on the lower numbers, as they prefer it.

The American system of maintaining prices at home, and selling their surplus at lower prices for export, gives—it should be carefully noted—American cotton goods an appearance of lowness of cost of production which is not warranted by facts.

We have seen that where Americans pay higher wages they obtain greater efficiency and a slightly lower labour cost; but taking weaving and spinning together, they are really not in a position to compete with us. It should be specially mentioned that many of their goods could not be made here without altering our existing arrangements for spinning, sizing, and weaving, and this makes comparisons of cloths produced in the two countries very difficult, if not misleading. The broad fact, however, remains that Americans are losing ground in their exports of cotton goods, in spite of their boasted efficiency, of the geographical advantage they possess, and of their reciprocity treaties.

There is, however, no doubt that our American cousins are far in advance of us in the methodical organisation of their productions and in the promptness with which they take advantage of new labour-saving appliances.

AMERICAN EXPORT TRADE.

How insignificant and devoid of development their foreign trade is, is shown by Mr. Ellison in his "Centennial Sketch of the Cotton Trade in the United States":

VALUE OF COTTON GOODS PRODUCED IN THE UNITED STATES
AND EXPORTED IN THOUSANDS OF DOLLARS.

	Value of Cotton Goods Produced.			Proportion.	
	Consumed at Home.	Exported.	Total.	Consumed at Home.	Exported.
1830...12,866,000	\$30,718	\$1,318	\$32,036	95'89%	4'11%
1890...12,622,000	\$240,000	\$10,000	\$250,000	96%	4%

VALUE OF COTTON PRODUCTS CONSUMED.

	Value of Cotton Goods Consumed.			Home & Foreign Proportion.	
	Population.	Home production.	Imported.	Total.	Home production, Imported.
1830...12,866,000	\$30,718	\$7,862	\$38,580	79'62%	20'38%
1890...12,622,000	\$240,000	\$29,918	\$269,918	88'92%	11'08%

Their exports of cotton goods had risen to 9'50 per cent. of the total production in 1860, but have since been steadily declining. Their imports of cotton goods reached high water in 1850 with 24'86 per cent., and in 1860 with 23'81 per cent., and have gradually shrunk to the present figure.

As Mr. Ellison says: "The policy which restricts imports also restricts exports, as is shown in the inability of the American manufacturers to extend the consumption of American cotton goods abroad."

Compare with this the development of the English export trade during the same period.

VALUE OF COTTON MANUFACTURES PRODUCED IN GREAT BRITAIN
AND EXPORTED IN THOUSANDS OF £S.

	Value of Cotton Goods Produced.			Proportion.	
	Population.	Total.	Consumed at Home.	Exported.	Consumed at Home.
1830...24,000,000	£32,062	£13,351	£18,711	41'64%	58'36%
1891...13,383,200,000	£97,048	£30,000	£67,048	30'91%	69'09%

Comparison of consumption and exports of cotton manufactures in Great Britain and the United States:

VALUE OF COTTON MANUFACTURES.

	Consumed at Home per Head of Population.		Exported per Head of Population.	
	1830.	1891.	1830.	1891.
Great Britain.....	\$ 2'39	= 10s. 0d.	\$ 0'10	= —s. 5d.
United States.....	\$ 3'83	= 16s. 0d.	\$ 0'16	= —s. 8d.

Facts speak for themselves. If the United States cannot compete with England in spite of the great advantages they enjoy, and the apparently cheaper labour cost in weaving, it can only be due to two causes—the economic conditions under which her people live, and the longer hours they work.

INDIA.

The development of cotton spinning and weaving in factories has made very great progress in India under the peculiar conditions produced by the enormous depreciation of silver. The increase in spindles in eight years is 66'6 per cent, but the increase in the quantity of cotton spun is 96 per cent, showing with improved machinery an increased efficiency on the part of the Indian operatives. The cotton spun is still only 1'57lb. per inhabitant. The average number of operatives per 1,000 spindles is 29'36 against our 4'86*. The imports of yarn from England between 1885 and 1893 fell off 2,996,000lb., or 7'2 per cent, and the Indian exports of yarn from 1884-5 to 1892-3 increased 123,278,000lb. or 187 per cent. In cotton goods our exports to India increased in 1893 against 1885, 228,144,000yds. or 13'62 per cent; or taking it all round we can say that our trade with India in eight years has not decreased, whilst India has established a respectable home industry, and has become our competitor in China and Japan in low counts of yarn.

The Indian labour cost of spinning, as expressed in our gold standard, shows the effects of the depreciation in the value of silver.

Since 1884-5 the wages of Indian cotton operatives have advanced fully 25 per cent, as evidenced by an Indian Government Report, but, as the efficiency of the workers increased, the labour cost per lb. of yarn spun has not changed much.

LABOUR COST IN INDIA.

In turning now to the working of two modern Indian mills, during last year, we find—

Mill 1—containing ring spindles only, costing Rs.41 per spindle, at 1s. 4½d. = 56s. 4½d.:

Production of 1,000 spindles in a week of 75 to 80 hours, 2,671lbs. of 20's twist.

Operatives and jobbers employed per 1,000 spindles, 31'60.

Labour cost per lb. of yarn spun, including bundling, &c., 5'52 pies at 1s. 4½d. = 0'474d. per lb., at 1s. 1d. = 0'374d. per lb.

* It is probable that the Indian mill statistics include in some cases the operatives employed in reeling. Competent authorities state that the average number of hands employed in spinning mills, excluding reeling, is about 24 per 1,000 spindles.

Mill 2—Mule and ring spindles, also spinning 20's twist at a labour cost, including bundling, of 5'37 pies per lb., at 1s. 4½d. = 0'461d. per lb., at 1s. 1d. = 0'364d. per lb.

The total cost of production of this latter mill, including all expenses and charges, except depreciation, was 14'212 pies at 1s. 11c. = 0'963d. per lb.

DECLINE IN PRICE OF SILVER.

Every successive decline in the price of silver becomes a corresponding gain to the Indian spinner, as far as the labour cost is concerned, although his charges for coal, insurance, and mill supplies will slowly rise.

The only conclusion we can come to, therefore, is that the depreciation of silver has the same effect as a Government bounty given to Indian spinners, or as a Customs duty levied on the production of English mills.

Let us eliminate from consideration for a moment, the fall that has taken place in exchange, and return to the days before the disorganisation caused by this monetary disturbance began. Labour cost in pies was then the same, practically 5'37 per lb.; but whilst in those days the exchange of 2s. expressed this Indian cost at 0'671d., to-day with exchange at 1s. 1d. this same cost is only 0'364d. Could there be a stronger illustration of the disadvantages suffered by English producers who, while they could easily beat the former labour cost, have no chance against the latter?

The development of Indian cotton spinning is not due to low wages and long hours; it is principally due to the advantage the Indian spinner derives from the continuous depreciation of silver.

The effect produced by the closing of the Indian mints to the coinage of silver in June of last year forcibly illustrates this question of exchange. It stimulated our exports of cotton yarn and goods to India, and completely paralysed India's export of these to the far East.

In six months ending 31st December, we exported to India:—

1892	Cotton Yarn	21,021,400lbs.
1893	Cotton Yarn	24,160,600lbs.

An Increase of 3,139,200lbs. = 14'93 per cent.

1892	Cotton Goods	946,476,900yds.
1893	Cotton Goods	1,124,980,700yds.

An Increase of 178,503,800yds. = 18'86 per cent.

On the other hand:

The total exports from India in the same six months were:

1892	Cotton Yarn	96,023,700lbs.
1893	Cotton Yarn	56,403,800lbs.

A Decrease of 39,619,900lbs. = 41'26 per cent.

1892	Cotton Goods	37,610,000yds.
1893	Cotton Goods	32,912,900yds.

A Decrease of 4,697,100yds. = 12'49 per cent.

The Bombay mill owners at once, and wisely, decided to go on short time for six months, and advices now state that not half-a-dozen mills are making a profit.

The Indian spinner, however, enjoys some natural advantage over us in the proximity of his mill to the cotton fields and consuming markets, for such yarn as the low-class Indian cotton will produce.

The attempt to grow American cotton in India has been abandoned, the Government having closed the farm on which experiments with this object were carried on for some years.

The Indian management of cotton mills, however, taken as a whole, is very inefficient, and Indian operatives, as their miserably low wages imply, possess very low productive abilities.

The average yarn number spun in India does not exceed 20's, and it is not likely that much competition will arise in finer counts for years to come.

In the appendix will be found the latest official information on the cotton trade of India.

Whilst with the present rate of exchange our trade in coarser counts of yarn is drifting into the hands of Indian spinners, the possibilities of India and China and the other thickly populated Eastern countries are so enormous, and the Indian production of yarn and cloth is so insignificant in comparison to the number of inhabitants, that we may count on a large and probably an increasing trade with the East for many years to come. Could the great question of exchange, so important to the Lancashire operative and producer, be settled, an enormous expansion would again be given to the whole of our Eastern trade. We never produced cheaper, and we have such a firm hold and accurate knowledge of these markets that we may call their trade our monopoly, which no competitor can take from us.

JAPAN.

Encouraged by the success of the Indian spinning mills, Japan has commenced spinning and weaving in factories.

The industry is quite in its infancy, but promises to develop rapidly, their labour cost of production, in relation to ours, being equally affected by the depreciation of silver.

There are at present 42 spinning mills in Japan, all managed by able natives; and we have the curious phenomena of our youngest and least experienced competitor using our best machinery, but not requiring our talent to manage it. This is unique in the history of the cotton industry.

The total number of spindles is 538,000, but of these only 345,000 were at work during the six months ending June 30th, 1893; they, however, were kept going day and night, the mills frequently closing only half-an-hour out of the 24.

There seems to be a great scarcity of operatives, large numbers of mills working only half their spindles on this account. Owing to this labour difficulty strikes for an advance of wages had taken place at several mills, and had, of course, succeeded.

LABOUR COST IN JAPAN.

Indian and Chinese cotton is spun, and the average number for the six months ending September, 1893, was 17's. The labour cost of this yarn was 0'84 sen. per lb., which, at the present low exchange of 2/1, = 0'21d. per lb.

The number of operatives required to work 1,000 spindles in Japanese cotton mills was 36'18 per day of 11½ hours, or 72'36 for day and night work.

The production per day of 11½ hours, per 1,000 spindles of this yarn was 426lb.

From an eye-witness, lately returned from Japan, I hear that the Japanese operatives are most industrious, painstaking, and clever, and much more reliable and better workers than their Indian competitors.

An analysis of the Japanese Cotton Spinners' Circulars shows that out of 42 mills there were 23 with less than 10,000 spindles, and 34 with less than 20,000 spindles, and that the largest mill in Japan contained only 53,112 spindles. This is as yet a very insignificant industry for an enterprising nation of 42,000,000 inhabitants, and we must look for a considerable development in the future.

The labour cost per lb. of yarn, both in India and Japan, as expressed in our gold standard, is, owing to the depreciated currency, so much lower than anything we, our European or American competitors are able to do, that no reduction of wages, even if this did not injure the efficiency of our labour, could possibly obtain for us that share of the trade which India and Japan are capable of doing.

Not the long working hours or low wages paid in Eastern countries are making them formidable competitors; it is the depreciating currency which has enabled them to develop their trade so rapidly.

The following table shows the Exports per head, and the relative position of each country in the export trade of Cotton Yarn and Goods:

2**

	Population.	Yarn Exported.		Goods Exported.	
		Total in lbs.	Pro- portion per cent. head.	Total in lbs.	Pro- portion per cent. head.
France	39,000,000	2,350,000	'53 '06	45,000,000	3'63 1'15
Belgium	6,200,000	4,126,000	'93 '66	13,708,000	1'10 2'21
Holland	4,600,000	20,879,000	4'69 4'54	35,260,000	2'85 7'66
Italy	31,900,000	1,319,000	'29 '04	578,000	'05 '02
Austria	42,000,000	3,664,000	'82 '09	6,170,000	'50 '14
Spain	18,100,000	1,500,000	'34 '08	20,338,000	1'64 1'12
United States	65,000,000	none	...	32,000,000	2'58 '49
Germany	50,300,000	17,590,000	3'94 '35	73,620,000	5'95 1'46
Switzerland ..	3,000,000	3,012,000	'68 1'003	15,925,000	1'29 5'31
Russia	100,400,000	55,000	'01 '0005	2,358,000	'19 '02
India	294,000,000	162,900,000	36'54 '55	30,000,000	2'42 '102
Japan	42,000,000	40,000	'01 '001	2,500,000	'20 '06
Great Britain ..	38,200,000	228,360,000	51'22 '598	961,000,000	77'60 25'16
		100%		100%	
Total...		445,795,000lbs.		1,238,457,000lbs.	

Great Britain holds 51'22 per cent., India has secured 36'54 per cent. of the yarn exports of the world, and practically there are no other competitors in this branch.

As regards goods, we export 77'60 per cent. of the total, whilst the exports from other countries are, as compared with ours, of very little importance. It should however, be specially noted, that Free Trade Holland, with her comparatively short hours and better wages, exports more yarn and goods per head of population than all the other countries, except ourselves.

We have seen that under advancing wages and shortening of hours the labour of our operatives has become less expensive, by being more productive. We must not endanger that high productivity by reducing the standard of living or the hours left for recreation and sleep. Any reduction in wages or increase in working hours would mean more than a corresponding reduction in production.

The operatives are right—a "living wage" is necessary: not only for their maintenance and comfort; it is also an economic necessity for a cheap production. Reduce remuneration below

what may be termed a "living wage," and our industrial supremacy will be lost. "Paradoxical as it may appear, a cheap production exists only where wages are high and hours short."

Long hours, low wages, and taxes on the food of the people, have crippled the development of the cotton industry of our opponents; whilst our shorter hours, higher wages, and cheaper conditions of living, have brought about that growth of energy and vigour which have made England supreme in the cotton trade of the world!

Every previous reduction in working hours has undoubtedly increased the efficiency and productiveness of labour. Is it possible to obtain a further increase of that efficiency and productiveness by still further reducing the working hours?

I shall refrain from giving the satisfactory results obtained by the introduction of an eight hour day in other trades and occupations. I shall not even bring forward the testimony of firms whose machinery could not be increased in speed and still obtained the same and better results in eight hours than previously in nine or ten. The case of an eight hour day, or 48 hours a week, in the cotton trade must depend exclusively on the possibility of a further increase in the productive energy of our cotton operatives, and the possibility of a further improvement in mechanical appliances.

Spindles can be run at 12,000, nay 13,000 revolutions per minute, but the operatives are unable to work them, say our machinists. Is it not probable that more efficient operatives and fresh improvements in the construction of machinery will spring into existence with a shorter working day? The weavers cannot attend to more than four to six looms, say our manufacturers. Give them higher wages and the eight hour day, and will not their quickened energy and vigour enable them to respond to the greater demand on their working powers?

Walk through a cotton mill at five o'clock at night and notice the expression and bodily bearing of the mule spinner and his

* Schoenhof. "Economy of High Wages."

piecers attending a pair of mules with 2,600 spindles. It requires no physiologist to see the effect on mind and body of working in that heated atmosphere. When those workers return to their task the next morning, without breakfast, will their work express that potentiality which we might reasonably expect under more favourable conditions of rest and recuperation? Mr. Mather, in speaking of the success which has attended the introduction of the eight hour day in his works, lays special stress on the unnatural condition of men beginning the work of the day without the provision required by nature for the proper exercise of their mental and physical powers. Let us also take into account the saving of artificial light in winter, the gain of having one interruption only in the day working time; but above all let us lay stress on the advantages which must accrue through the increased opportunities afforded to our workers for study and intellectual improvement.

Continental observers consider that we possess an enormous advantage over our competitors, in the general desire of our working classes for improvement, and in the keen interest they take in any question or scientific discovery, especially if it affects their own trade or occupation. They contrast with this the apathetic, listless indifference of the Continental factory operative who, in his hopeless despair, engendered by long hours and miserable earnings, does not exert or interest himself in anything outside. He looks to Socialism only for his salvation.

"But," says Mr. Schoenhof, "the industrial efficiency of the workpeople grows in proportion to their intellectual advancement."

If the increase in the productivity of workers under an eight hour day should not, all at once, compensate for the reduction in working hours, no doubt an increased cost of the product would result; but this, as in former years will inevitably lead to a further improvement in machinery and the adoption of methods of manufacture up to now impossible. Not every employer, however, will be able to exist under an eight

* "Economy of High Wages."

hour day. A number of concerns with obsolete machinery, and without the means of replacing it, must disappear; this, however, will be no loss to the nation or the trade. The "survival of the fittest" will be increasingly felt; for it is only with the best machinery, with the most vigorous workmen, and under the most competent management that we can hope to hold our own in the trade of the world. It is not a question of keeping a number of antiquated, obsolete concerns alive—we had not that consideration for the poor handloom weavers. It is a question of enlarging the cotton trade of England, of increasing the productive powers, the happiness and welfare of our people.

Professor Brentano, in advocating shorter hours in Germany, says: "We know that on the battle field the victory belongs to the nation that puts the most efficient, the best equipped soldiers into the field, and we (the Germans) are not afraid of any sacrifice, or expense, to secure every possible military advantage for the Fatherland. In the same way the proportion of the cost of labour in relation to the cost of production is simply a question of equipment—whether the worker be provided with all the newest improvements and discoveries or not, whether the worker be well fed and nourished, or underpaid and over-worked decides the industrial struggle."

Mr. Schoenhof states: "The improvements in the condition of labour in England are due to this—that the working classes were in a position that they could wrench from the privileged classes the necessary concessions which alone could enable them to reach the position they occupy to-day. This fortunate position is the only vantage ground which she possesses and which secures to her the safe and undisputed rulership of the commerce of the world. Reluctantly, sullenly even, the employing classes there acquiesce in the new development. By education and association they are still made to cherish the belief, despite the world of facts surrounding them, that a low rate of wages is necessary to a low rate of production."

This is the opinion of the keen American observer and expert, himself formerly a large employer of labour and a man who has given years of study and investigation to the cost of labour and wages in all civilised countries of the world. But if there still be employers to-day who hold the opinion expressed above, they must feel how the ground on which they stand is disappearing step by step from underneath their feet—how the whole fabric of the “supply and demand” doctrine, applied to labour, is fast crumbling to pieces. In our cotton trade the day is gone when supply and demand enabled employers to grind down their “hands” below the barest necessities of life—the day is gone when large fortunes were amassed under conditions of labour little better than slavery.

The basis of our wealth, intelligence and culture is broadening; the pauper cotton “hand” of the thirties and forties is rapidly becoming the respectable middle class citizen of to-day, whose intellectual and moral elevation are the greatest safeguards against anarchism, outrage and violence. The patience and fortitude, the orderliness of the cotton operatives and coal miners under the recent lockouts were the admiration of the civilised world and deservedly enlisted the sympathy of their fellowmen. A complete change has come over public opinion and the press; the despised Trade Unionist of 40 years ago is a recognised power in the State to-day. “The organisations of Labour in England,” says Professor von Schulze Gaevernitz, “have become veritable peace societies,” and indeed the number of labour struggles has steadily diminished in the last 50 years. The strongest adherents of the “supply and demand” doctrine will no longer maintain that Trade Unions are injurious to the prosperity of trade. It is entirely owing to organisation that Labour has been able to sell its only commodity in so good a market, and has secured the high remuneration it enjoys to-day. The wisdom and moderation shown so far by Trade Unions encourage the hope that they will not push their demands beyond reason and the best interests of the country. They fully recognise the importance of our foreign trade, and are not likely

to injure their own condition by driving it into the hands of our competitors.

The remuneration of Capital is yearly diminishing. The prosperity, health, happiness, and comfort of our workers, however, are constantly increasing, and we can but wish them “God speed” in their course.

The development of the cotton industries of our Continental neighbours, of India, and Japan, are, however, forcing us on to further progress. Cost of production will again have to be cheapened. Knowledge of the artistic requirements of our own and foreign consumers must be extended, and, above all, the energy and industrial force of our workers must be increased to meet the advancing productivity of foreign competitors.

Shortened hours and higher wages have made them, by increased efficiency, approach nearer to our cost of production. By shortened hours and high wages we have previously outdistanced all competition, and shorter hours will again increase the energy, the vitality, the productiveness of our workers on which alone depends the victory in the industrial struggle.



APPENDIX.

INDIA.

The development of the spinning and weaving industry and the exports of cotton yarn and piece goods are as follows.

Cotton Yarn—The exports are :

—	Lbs. (ooo's omitted.)	Rs.	—	Lbs. (ooo's omitted.)	Rs.
1883-84	49,876	1,926,162	1888-89	123,907	5,207,100
1884-85	65,897	2,441,101	1889-90	141,950	5,748,732
1885-86	78,242	2,755,252	1890-91	169,275	6,543,364
1886-87	91,804	3,336,861	1891-92	161,253	5,771,033
1887-88	113,451	4,077,386	1892-93	189,175	6,773,482

Although the quantity exported increased by 17 per cent, and the value increased in like proportion, the year's trade can hardly be regarded as satisfactory. The production of the mills has, for the time, overtaken consumption; and with dull and dragging markets in China where the Indian yarns are in the main consumed, it was decided last February that it was necessary for the mills to work short time.

The following remarks are quoted from the report of the Bombay Millowners' Association for 1892 :

"In some respects the past year has been a disappointing one for those engaged in cotton spinning and weaving in India, the high prices attained by the raw material having seriously circumscribed profits; but, on the other hand, there is much room for satisfaction in the fact that the consumption of goods and yarns, both locally and in the further East, shows a steady rate of progression; and, doubtless, when prices of cotton recede to a level which will enable manufacturers to sell at rates low enough to encourage consumption, a marked expansion in the demand will be experienced. . . . Although, as previously mentioned, there

has been a continuously large and, in fact, increased demand for the production of the mills, the high prices of cotton towards the end of the year have so materially curtailed profits that several millowners and agents have shown a desire to adopt short time. Up to the time of writing this report, however, the movement has not received general support, and opinion seems considerably divided as to whether, in the eventual interests of the industry, it will not be better—while the demand is so good—to continue working at a very bare margin of profit, or even with no profit at all, in preference to enhancing the cost of production by short time."

The exports of cotton piece-goods (grey, white, and coloured) in the same period have been (in yards, ooo's omitted) :

1883-84	... ..	55,564	1888-89	... ..	70,244
1884-85	... ..	47,908	1889-90	... ..	59,462
1885-86	... ..	51,528	1890-91	... ..	67,639
1886-87	... ..	53,360	1891-92	... ..	73,351
1887-88	... ..	69,434	1892-93	... ..	79,679

The distribution of the exports in the last three years has been as follows :

	Yarn, lbs. (ooo's omitted).			Piece-Goods, Yards (ooo's omitted).		
	1890-91.	1891-92.	1892-93.	1890-91.	1891-92.	1892-93.
China	151,050	145,558	176,860	5,538	7,351	13,506
Japan	11,876	6,682	7,352	17	—	65
Aden	1,852	2,251	1,347	12,685	11,764	12,370
Straits	2,045	3,987	1,729	5,498	6,318	6,775
Asiatic Turkey	943	941	747	1,306	2,789	2,294
Java	533	284	326	—	26	39
Arabia	299	440	286	2,643	3,209	3,525
Persia	324	392	337	930	1,715	1,375
East Coast of Africa (Mozambique and Zanzibar)	46	118	44	25,509	27,835	24,888
Abyssinia	—	4	—	3,940	1,773	3,154
Ceylon	265	46	70	6,533	6,692	7,219
Mekran & Sonmiani	42 {	7	75	1,062	1,537	1,623
Other countries ...		541	—	1,978	—	2,844

The progress of the spinning and weaving industry in the last fifteen years is shown in the table appended :

Year.	Number of Mills.	Number of Spindles.	Number of Looms.
1873-79	58	1,436,464	12,983
1882-83	62	1,654,108	15,116
1887-88	97	2,375,739	18,840
1893-91	125	3,197,740	23,845
1891-92	127	3,272,988	24,670
1892-93	130	3,378,303	26,317

Only five new mills have been constructed during the last two years.

The mills are located as follows:

	Mills.	Spindles.	Looms
Bombay Presidency	88	2,402,673	19,847
Bengal (suburbs of Calcutta)	8	304,354	—
Madras	11	239,200	973
North-Western Provinces	5	134,428	2,156
Punjab (Delhi)	2	21,642	154
Central India (Indore)	1	26,036	464
Central Provinces	5	87,944	876
Ajmere-Merwara	1	12,312	250
Hyderabad	3	52,238	609
Berar	1	17,636	214
Mysore	2	29,784	215
Pondicherry	2	27,056	559
Travancore	1	23,000	—

About 121,000 persons are stated to have been employed in the mills at the end of 1892-3, and the capital invested is returned at Rs. 1,340,000; but several of the mills—private concerns—make no return of their capital, the figures being confined to mills worked by joint-stock companies. About three-fourths of the spinning and weaving capacity of the Indian mills are concentrated in the Bombay Presidency, and mostly in the city and suburbs of Bombay.

From the Report of the American Commissioner of Labour.

CONTINENT OF EUROPE.

Mill No. 13.

Product No. 12.

Period covered—July 1st to December 31st. Days of running time, 151.

Steam Power.

10,860 Ring Spindles.
39,261 Mule Spindles.

Cotton used—New Orleans middling and low middling, strict good ordinary, strict middling waste, 2,139,626lbs.

Yarn produced—Warp and Weft 1,945,052lbs.

Waste 9'09 per cent.

Net cost of cotton and material, deducting waste sold, \$256,928.

Cost of labour:—

Opening	\$		
Picking			
Drawing	12,161		\$ 35,074
Carding			
Roving			
Spinning, Ring and Mule	12,847		
Subsequent manipulations	3,226		
Engineers' and yard hands	6,840		
Clerks and Officials	3,247		
Fuel, repairs, supplies, oil, and other expenses	21,146		
Taxes	1,434		
Insurance	1,347		
Interest and depreciation	12,993		
			Total.
			\$ 14,340

\$ 317,829 total of labour, material, &c., without insurance and interest.

28's mule twist—1,000 spindles per mule—Pounds per spindle per day of 10 hours, '1562.

Cost of labour per lb.:

Roving, opening, picking, drawing, carding.	Spinning.	Subsequent manipulation.	Engineers and yard hands, &c.	Total.
\$ '008630	'006690	'002289	'004854	'022463
Pence '4315	'3345	'1144	'2427	1'1231

Elements of cost per lb.:

Material (net).	Labour.	Clerks and Officials.	Oil, fuel, repairs, lighting.	Taxes.	Total.
\$ '138023	'022463	'002304	'015006	'001018	'178814
Pence '69011	1'1231	'1152	'7503	'0509	8'9406

ENGLAND.

Mill No. 95.

Product No. 236.

No particulars of machinery and consumption of cotton recorded.

	Inch.	Picks per inch.	Warp.	Weft.	Sizing.	Yards per lb.	Picks per minute.
Printing Cloth	32	64 x 64	338	498	6'45%	7'84	210
	47'22 yards per day of 10 hours.						

Cost of labour per yard:

Spooling, warping, dressing, drawing in	Weaving.	Warehouse and other expenses.	Total.
\$ '001573	'005035	'000629	'007237
Pence '0787	'2517	'0314	'3618

These inseparably combined together.				
	Oil, fuel, repairs, lighting, &c.	Total, including insurance & interest.		
* Material (net).	Labour.	Clerks & Officials.	Taxes.	
\$ '0221002	'007237	'001311	'031150	
Pence 1'1301	'3618	'0656	1'5575	

* The yarn was bought, hence the cost of spinning and previous operations is included with the cost of materials.

CONTINENT OF EUROPE.

Mil No. 92.

Product No. 505.

Steam Power.

No particulars of machinery and consumption of cotton recorded.

	Inch.	Picks per lb.	Warp.	Weft.	Sizing.	Yards per lb.	Picks per minute.
Shirting.....	35'43	67 x 73	33s	44s	5'05%	535	170
	35'65 yards per day of 10 hours.						

Cost of labour per yard:

	Weaving.	Warehouse and other expenses.	Total.
* Spooling, warping, dressing, drawing in.	'007293	'001719	'009012
\$ '000612			
Pence '0306	'3647	'0859	'4506

	Labour.	Clerks and officials.	Oil, fuel, lighting, repairs, &c.	Taxes.	Total.
Material (net).					
Yarn was bought.	'009624	'000349	'001802	'000088	'049196
\$ '37333					
pence 1'3667	'4812	'0174	'0901	'0044	2'4598

* The expenses for dressing, drawing in, and warehouse labour, are inseparably combined with those for all other labour.

NORTHERN DISTRICT, UNITED STATES.

Mill No. 4.

Product No. 5.

Steam and Water Power.

Period covered—July 1st to December 31st. Days of running time, 153.

44,424 Ring Spindles. } Total 80,677.
36,453 Mule Spindles.

Cotton used—strict, low middling, and middling, 2,298,532lbs.

Yarn produced—Warp, 707,552lbs.

Weft, 1,212,808lbs.

Waste, 15'54 per cent.

Net cost of cotton and material, deducting waste sold, \$ 234, 191.

Cost of labour:

Opening	\$	
Picking		
Drawing	20,728	\$ 73,799
Carding		
Roving		
Mule spinning	14,288	
Ring spinning	14,488	Total cost of labour.
Subsequent manipulations for a part of the yarn only ...	6,103	
Engineers and Yard hands, &c.	18,192	
Officials and Clerks.....	5,968	
Fuel, repairs, supplies, oil, and other expenses	16,361	
Water power.....	2,106	
Taxes	7,144	
Insurance	2,948	
No interest, no depreciation.		

\$ 339,569 total of labour, material, &c., without insurance and interest. Average.

20's Warp Ring, 160 spindles per frame, lb. per spindle per day of 10 hours '3021.

Cost of labour per lb.:

Picking, opening, drawing, carding, roving.	Spinning.	Subsequent manipulations.	Engineers, yard hands, &c.	Total.
\$ '007650	'006790	'006120	'006720	'027280

Elements of cost per lb.:

Material (net).	Labour.	Clerks and Officials.	Oil, Fuel, Repairs, Lighting, &c.	Taxes.	Total
\$ '119700	'027280	'002200	'007710	'002640	'159530
American Labour Cost of Carding and Spinning the Yarn per lb.					
\$ '014440					
Pence = '7220					
Approximate English Labour Cost of Carding and Spinning the Yarn per lb.					
'4000 pence.					

From the Report of the American Commissioner of Labour.

NORTHERN DISTRICT, UNITED STATES.

Mill No. 22.

Product Nos. 73—349—522.

Period covered—May 1st to April 30th. Days of running time, 306.

Steam and Water Power.

79,728 Ring Spindles

68,844 Mule "

4,015 Looms

Cotton Used—Strict middling 13,898,046lbs.

Produced—11,714,718lbs. of cloth = 41,670,060 yds. of cloth. Waste 17'40 per cent.

Net cost of cotton and material, deducting waste sold, \$1,425,586.

Cost of labour:—			
Opening	\$		
Picking			
Carding	69,395		
Drawing			
Roving			
Mule spinning	54,696	\$535,657	
Ring	45,562		
Spooling		Total cost	
Dressing		of labour.	
Warping	54,755		
Drawing in			
Weaving	239,520		
Warehouse	20,985		
Other expenses	50,544		
Clerks and Officials	12,400		
Fuel, repairs, supplies, oil, } and other expenses	76,188		
Taxes	32,585		
Insurance	3,240		

\$2,082,416 total of labour, material, &c., without insurance and interest.

	Inch.	Picks per inch.	Warp (Ring).	Weft. (Mule).	Sizing.	Yards per lb.	Picks per minute
Product No. 73, Drill.....	29	69 x 48	13'50	13'25	2 %	2'85	180
" 349, Sheeting. 36	62 x 62	20	22	2 %	3'50	160	
" 522, " 40	72 x 80	28	34	2 %	3'75	155	

Cost of labour and material per yard:

	Opening, picking, carding, drawing, roving.	Spinning.	Spooling, warping, dressing, drawing in.	Weaving.	Warehouse and other expenses.
Product No. 73...	\$'001330	'001916	'001047	'004579	'001367
" 349...	'001710	'002404	'001346	'005887	'001758
" 522...	'002356	'003395	'001854	'008110	'002423
	Materials (net).	Clerks and officials.	repairs, oil, lighting, &c.	Taxes.	Total.
Product No. 73...	\$'042699	'000237	'001456	'000623	'052254
" 349...	'034769	'000305	'001872	'000801	'050912
" 522...	'032451	'000420	'002580	'001103	'054692
	American labour cost of carding and spinning the yarn per lb.	English labour cost of carding and spinning the yarn per lb.	American labour cost of weaving per yd.	Approximate English labour cost of weaving per yd.	
Product No. 73	\$'009251	'3200 pence.	\$'004579	'2250 pence.	
" " Pence = '4625			Pence = '2289		
Product No. 349	'014609	'4300 pence.	'005887	'2756 pence.	
" " Pence = '7304			Pence = '2943		
Product No. 522	'021566	'6500 pence.	'008110	'3850 pence.	
" " Pence = '10783			Pence = '4055		

From the Report of the American Commissioner of Labour.

SOUTHERN DISTRICT, UNITED STATES.

Mill No. 11.

Product No. 8.

Period covered—January 1st to December 31st. Days of running time, 308.

Steam and Water Power.

6,840 Ring Spindles } Total, 10,720 Spindles.
3,880 Mule Spindles }

Cotton used—low, ordinary, to middling, 1,968,661 lbs.

Yarn produced—Warp, 1,724,474 lbs.

Waste, 12.40 per cent.

Net cost of cotton and material, deducting waste sold, \$197,020.

Cost of labour:

	\$	
Opening		
Picking		
Drawing	14,074	\$30,912
Carding		Total cost
Roving		of labour.
Spinning ring, including subsequent manipulations }	12,662	
Engineers, Yard hands, &c. ...	4,176	
Officials and Clerks	7,160	
Fuel, Repairs, Supplies, Oil, } and other expenses	13,343	
Water	5,400	
Taxes	1,868	
Insurance	2,243	

No depreciation and no interest reported.

\$255,703—Total of labour, material, &c., without insurance and interest.

20's ring and mule twist. No. of spindles per frame and mule, and lb. per spindle, not reported.

Cost of labour per lb.:

Picking, opening, drawing, carding, roving.	Spinning including subsequent manipulation.	Engineers, yard hands, &c.	Total.
\$'014019	'012613	'004160	'030792

Elements of cost per lb.:

Material (net).	Labour.	Clerks and officials.	Oil, fuel, repairs, lighting, &c.	Taxes.	Water Power.	Total.
'114249	'030792	'007132	'013291	'001861	'005379	'172704
American labour cost of carding and spinning the yarn per lb.			Approximate English labour cost of carding and spinning the yarn per lb.			
\$'026632						
pence = '1'3316			'4400			

From the Report of the American Commissioner of Labour.

NORTHERN DISTRICT, UNITED STATES.

Mill No. 14.

Product No. 219.

Period covered—January 1st to December 31st. Days of running time, 306.

Steam Power.

28,896 Ring Spindles.
29,592 Mule Spindles.
1,500 Looms.
Cotton used—strict low middling, 3,444,281 lbs.
Produced 2,884,442 lbs. of cloth = 20,575,109 yds. of cloth. Waste, 21.62 per cent.
Net cost of cotton and material, deducting waste sold, \$332,908.

Cost of Labour:

Opening.....	\$	
Picking		
Carding	29,930	
Drawing.....		
Roving		
Mule Spinning	21,421	\$ 198,081
Ring Spinning	18,859	
Spooling.....		Total cost
Dressing.....		of labour.
Warping	20,334	
Drawing in		
Weaving.....	92,454	
Warehouse.....	3,081	
Other expenses.....	12,002	
Clerks and Officials	8,000	
Fuel, repairs, supplies, oil, and other expenses	46,651	\$ 64,475
Taxes	9,824	
Insurance	2,607	
Interest	15,157	\$ 17,824

\$ 596,364 total of labour, material, &c., without insurance and interest.

Priting Cloth...	In. 28	Picks per in. 64 x 64	Warp. 29's	Weft. 37's	Sizing 6.41 %	Yards per lb. 7.13
	Warp (ring). 29	Lb. per spindle per day of 10 hrs. 1.822	Weft (mule). 37	Lb. per spindle per day of 10 hrs. 1.442	Picks per min. 175	Yds. per loom per day of 10 hrs. 44.83

Cost of Labour per yard—

Carding, opening, picking, drawing, roving.	Spinning.	Spooling, warping, dressing, drawing in.	Weaving.	Warehouse and other expenses	Total.
\$ '001455	'001958	'000988	'004494	'000776	'009671
Material (net).	Labour.	Clerks and Officials.	Oil, fuel, repairs, lighting, &c.	Taxes	Total.
\$ '016180	'009671	'000389	'002267	'000478	'028985
American labour cost of carding and spinning the yarn per lb.	English labour cost of carding and spinning the yarn per lb.	American labour cost of weaving per yard.	Approximate English labour cost of weaving per yard.		
\$ '024334		\$ '004494			
pence = 1'2167	} 0'70d.	pence = '2247	} '2440 pence.		

From the Report of the American Commissioner of Labour.

SOUTHERN DISTRICT, UNITED STATES.

Mill No. 49.

Product Nos. 91—313.

Period covered—January 1st to June 30th. Days of running time, 152.

Steam Power.

This mill is exempt from taxes.

35,504 Ring Spindles.
960 Looms.

Cotton used—fair, middling, 2,254,654 lb.

Produced 1,903,110 lbs. of yarn = 7,711,312 yds. of cloth
121,711 lbs. of yarn. Waste 16.45%

Net cost of cotton and material, deducting waste sold, \$ 244,535.

Cost of labour:

Opening	\$	
Picking		
Carding	17,685	
Drawing		
Roving		
Ring spinning	14,640	\$ 79,772
Spooling.....		Total cost
Dressing.....		of labour.
Warping	6,806	
Drawing in.....		
Weaving.....	30,260	
Warehouse	2,199	
Other expenses	8,182	
Clerks and Officials	3,400	
Fuel, repairs, supplies, oil, and other expenses	21,875	
Insurance	4,143	
Interest	10,602	\$ 14,745

\$ 349,582 total of labour, material, &c, without insurance and interest.

190 THE HOURS AND COST OF LABOUR IN THE COTTON INDUSTRY.

	Inch.	Picks per inch.	Warp.	Wett.	Sizing.	Yards per lb.	Picks per minute.
Product No. 91, Drill	30	66 × 44	13'60	14'25	7 %	3'00	170
" 313, Sheeting 36	44 × 44	18	35	7 %	5'30	170	

Cost of labour and material per yard :

	Opening, picking, carding, drawing, roving.	Spinning.	Spooling, dressing, warping, drawing in.	Weaving.	Warehouse and other expenses.
Product No. 91	\$ '002249	'001862	'000908	'004035	'001358
" 313	\$ '002346	'001942	'000946	'004208	'001417

	Materials (net.)	Clerks and Officials.	Supplies, repairs, oil, lighting, &c.	Total.
Product No. 91	\$ '040285	'000443	'002848	'053988
" 313	\$ '021973	'000462	'002970	'036264

	American labour cost of carding and spinning the yarn per lb.	Approximate English labour cost of carding and spinning the yarn per lb.	American labour cost of weaving per yard.	Approximate English labour cost of weaving per yard.
Product No. 91	\$ '012333	'3200 pence	\$ '004035	'1735 pence
" "	pence = '6166		pence = '2017	
Product No. 313	\$ '023584	'3500 pence	\$ '004208	'2000 pence
" "	pence = 1'1792		pence = '2104	



The Manchester Statistical Society.

(ESTABLISHED 1833.)

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EXTRACTS FROM THE RULES
OF THE
MANCHESTER STATISTICAL SOCIETY.

ESTABLISHED 1833.

PREAMBLE.—The objects of the Manchester Statistical Society are—The collection of facts illustrative of the condition of Society, and the discussion of subjects of Social and Political Economy, totally excluding party politics.

INTERPRETATION CLAUSE.—In these Rules the masculine shall include the feminine gender.

RULE 1.—Every ordinary member shall pay an annual subscription of half-a-guinea, or may at any time compound for his future subscriptions by paying at once the sum of five guineas. Every new member shall, on election, pay an admission fee of half-a-guinea; but members elected at the last ordinary meeting of any session shall not be charged with the annual subscription for that session.

2.—The annual subscription shall be due in advance on the 1st of October in each year.

3.—Gentlemen distinguished for their ability and zeal in cultivating Statistical inquiries, and living at least twenty miles distant from Manchester, may be admitted as corresponding members. No subscription shall be required from them.

4.—The ordinary meetings shall be held during the Society's session, viz., from the 1st of October to the 1st of July, with intervals not exceeding six weeks between each meeting.

NOTE.—The Society's Library is by arrangement with the Corporation of Manchester deposited at the Free Reference Library, King Street, and is open daily. Members desiring to borrow books can do so on obtaining an order from one of the Honorary Secretaries, viz., Mr. F. E. M. Beardsall, 63, Brown Street; Theodore Gregory, 26, Mosley Street.

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